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ABSTRACT

Twelve multidisciplinary activities for upper elementary students comprise this unit on occupations and crafts associated with the distinctive lifestyle of the people of North Carolina's coast and the Outer Banks. Some topics included are fishing, seafood, real estate, development, careers, crafts, and boats. Activities involve playing games, cooking, reading a play, making things, and discussing issues. Each lesson indicates skills used, lesson concepts, competency goals, objectives, materials, vocabulary, background information, teacher and student preparation, and activity procedures. Supplemental materials are provided for handouts and for constructing games and other items for the lessons. (DC)

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ED211389

Coastal Awareness in Public Education
PROJECT Cape

COASTAL LIVELIHOODS AND CRAFTS

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PROJECT CAPE TEACHING MODULE

Developed under an ESEA Title IV-C Grant

Dare County Board of Education
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TITLE: COASTAL LIVELIHOODS AND CRAFTS

GRADE LEVEL: 5-6

SUBJECTS: Language Arts, Mathematics
Science, Music, Art, Drama

SKILLS: Inquiry, Manipulative, Creative,
Organizational, Communicative,
Measurement

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Project CAPE Publication 5-6a

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UNIT CONCEPTS

WATER AND SOCIETY

Water influences history and human culture.

1. Water provides a source of food, raw material and energy for human consumption.
2. Water availability influences society's standard of living.
3. Water is a medium of transportation, commerce and communication.
4. Water availability shapes industry, agriculture and commerce.
5. Water plays a role in shaping our customs and beliefs.

WATER AND HUMAN EXPRESSION

Water influences human aesthetic and spiritual values.

1. Water inspires creativity in art, literature and music.
2. Water provides important forms of recreational activities during leisure time.
3. Water can provide the setting for human self-renewal and spiritual experiences.

WATER AND HUMAN IMPACT

Human activities present problems for aquatic ecosystems.

1. Man is dependent on aquatic ecosystems.
2. Water is a public resource.
3. Human activity may endanger aquatic organisms.
4. Human activity may deplete aquatic resources.

INTRODUCTION

The growth and development of the United States is strongly tied to her coastal regions. During the colonial and Revolutionary periods, the center of the country's population was near the coast. The coastal sounds and rivers were ports of entry and major routes of commerce.

Stretching along the North Carolina coast is a string of low, sandy islands known as the Outer Banks. The Islands are separated from the mainland by broad, shallow sounds and from each other by narrow inlets that are forever opening and closing.

The Outer Banks were settled primarily in the 18th century by herdsmen, fishermen and ship salvagers from England. Isolated from the mainland, surviving from generation to generation with limited resources, this small isolated population, long called "bankers", developed a distinctive pattern of life with self-sufficiency an inbred trait of character. Their salty, cockney-like twang gave these people the nickmane "hoi tiders."

A common misconception about the Outer Banks is the belief that commercial fishing was the primary source of income in the area since the days of early settlement. Certainly, since Colonial times, a large number of "bankers" fished both the sounds and from the sea beach. But it was primarily a part-time activity engaged in by stockmen, boatmen, pilots and other residents to supply their own family's needs for food.

One of the factors that retarded the development of commercial fisheries was the inability to deliver seafoods to the consumer while still fresh before the invention of power boats, highways and refrigeration. The first commercial fisheries concentrated in the rivers and sounds on such fish as herring and shad that could be smoked or salted without loss of flavor.

The coastal region's history, geography and natural resources have combined in the past to isolate the seashore islands from the mainlands across the sounds. Therefore, no matter what occupation a man claimed, he was also a carpenter, a mason, a sail maker, a boat builder, a farmer and a mechanic. Likewise, a housewife's duties included seamstress, nurse, cook, canner, beautician, teacher and counselor.

Today isolation is giving way to an influx of tourists, summer residents, automobiles, and the supportive highway systems. The Outer Banks have become a widely popular resort where tourists and retired persons come to breathe the salt air, bathe in the ocean, fish, eat out at the seafood restaurants, and explore the historic sites and the craft and curio shops. Perhaps our coastlands' most

valuable resource is her "people." We should be as concerned with the preservation of a way of life as with the conservation of our natural resources.

This unit has been designed to provide opportunities for children to become aware of the various types of occupations and crafts that have been developed within a distinctive way of life. Teaching strategies within the unit lessons provide hands-on-activities that require readily available materials. The unit has been designed to be used in its entirety or in part. It is recommended that the teacher incorporate individual lessons into the total curriculum where interest and topic sequence dictates. Please feel free to duplicate any or all materials from this unit that will maximize effective utilization. The activities may be modified to incorporate the teacher's own ideas, experiences and background to elaborate this subject material.

EXPLANATION OF CODING SYSTEM FOR SUPPLEMENTARY MATERIALS

GRADE LEVELS AND SUBJECTS	CODE
K-2 Multidisciplinary	K-2a, K-2b, K-2c
3-4 Multidisciplinary	3-4a, 3-4b, 3-4c
5-6 Multidisciplinary	5-6a, 5-6b, 5-6c

SECONDARY SCHOOL	
English	ENG
Occupational Education	OE
Social Studies	SOC
Science	
Life	SC1
Earth	SC2
Biology	SC3

LESSON NUMBERS	
1	1.
2	2.
3	3.
etc.	etc.

SUPPLEMENTAL MATERIALS	
1	.1
2	.2
3	.3
etc.	etc.

EXAMPLES

K-2a
1.1 Translates: a supplemental sheet, booklet or game number 1 that accompanies the 1st lesson of Unit K-2a for grades K-2.

SC2
6.4 Translates: a supplemental sheet, booklet or game number 4 that accompanies the 6th lesson in Unit SC2 for earth science.

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Lesson Number: 1
Skills: Organizational,
Manipulative,
Measurement

FISHING PORTS

LESSON CONCEPT

Fishing ports are located near major fisheries.

COMPETENCY GOALS

1. The learner will know that there is an unequal distribution of material resources.
2. The learner will organize and analyze information and draw conclusions.
3. The learner will use maps.
4. The learner will demonstrate skill in computation commensurate with his/her mental maturity.

OBJECTIVES

1. The student will be able to locate major bodies of water and fishing ports.
2. The student will be able to draw conclusions.
3. The student will be able to locate places on maps.

VOCABULARY

haul - the amount of seafood caught by a crew

"pack your haul" - pack the day's catch in ice for shipping

origami - Japanese art of folding paper into shapes

BACKGROUND INFORMATION

North Carolina fishing vessels navigate hundreds of miles of narrow channels meandering through shifting shoals of inlets and across broad sounds and up networks of interior rivers. The major fishing areas are located in Albemarle, Pamlico and Core Sounds and their tributaries, New River, Cape Fear River and the rivers and creeks of Brunswick County, west of the Cape Fear River.

North Carolina's commercial fisheries are based entirely on estuarine-dependent species. At some time in their life cycle, these species, including those caught offshore, must utilize our salt marshes, coastal sounds and rivers. These areas serve as spawning and nursery areas, feeding grounds, wintering areas and migration routes.

TEACHER PREPARATION

1. Obtain North Carolina maps, at least one for each team of four students.

2. Prepare a gameboard for the fishing game.
   a. Make a transparency of the gameboard design.
   b. Project the transparency onto a large sheet of poster board.
   c. Trace the game design, label the locations, and color the board to make it attractive.
   d. The board may be laminated to permit longer usage.
   e. Place the board at an interest center in the classroom.

3. Mimeograph settlement sheets. One sheet is needed by each team of four players.

ACTIVITIES

1. Divide the class into teams of four students.

2. Demonstrate the use of the index to cities and towns on the North Carolina map.

3. Ask the students to locate the following fishing ports:

Colerain	Wanchese	Morehead City
Englehard	Sneads Ferry	Swanquarter
Belhaven	Oriental	Southport
Atlantic	Beaufort	

4. Locate the major ports of Wilmington and Morehead City.

5. Locate the longest sound. (Pamlico)

6. Which sound has the higher salinity? Albemarle or Bogue? Why? (Bogue Sound has more inlets from the ocean.)

QUESTIONS

Involve the class in discussing the following questions.

1. Where are the nurseries located for species that are economically important to North Carolina? (Salt marshes, coastal sounds and coastal rivers.)

2. What is a port? (A place where boats dock and pack their fish for transporting.)

3. What are the characteristics of a good port? (Easy access from the ocean and sound; a large town with major highways.)

4. Why is navigating North Carolina's estuarine water dangerous? (Shifting sands, shallow inlets, irregular coastline.)

5. Why have Wilmington and Morehead City developed into major ports? (Both have characteristics of a good port.)

6. Why was North Carolina's coastline a haven for pirates? (Shallow waters, coves, inlets, deserted land.)

FOLLOW-UP ACTIVITY - The Fishing Game

1. Demonstrate to the students how to construct origami boats to use for playing tokens in the Fishing Game. (See supplementary sheet.)

2. Allow the students to go to the center, four in a group, to play the fishing game. A fifth student may check on the accuracy of the answers to questions given by the four players.

SOURCE

Source for free North Carolina maps:

North Carolina Department of Transportation
Raleigh, North Carolina 27611

Lesson Number: 2
Skills: Organizational,
Measurement,
Communicative

"LET'S GO FISHING"

LESSON CONCEPTS

1. Commercial fishing is an important way of earning a living in coastal regions.

2. There are many varieties of fish and shellfish on the North Carolina coast.

COMPETENCY GOALS

1. The learner will organize and analyze information and draw conclusions.

2. The learner will know the location and use of economic resources in North Carolina.

3. The learner will demonstrate skill in computation commensurate with his/her mental maturity.

OBJECTIVES

1. The learner will organize and interpret data.

2. The learner will solve realistic mathematic problems dealing with addition, multiplication and division.

3. The learner will learn important facts about the North Carolina coastline.

MATERIALS

3" x 5" index cards
glue
1 rod or fishing pole
string
magnet
1 large piece of poster board
5 copies of fisheries species pictures
5 copies of Tables 1 and 2
a die
paper

VOCABULARY

fisheries - aquatic organisms that have economic importance

finfish - animals with fins; includes bony and cartilaginous fish

crustaceans - animals with jointed legs, exoskeletons, gills; includes crabs, shrimp and lobsters

mollusks - animals with soft bodies and hard calcareous shells; includes oysters, clams and scallops

BACKGROUND INFORMATION

The fishing industry in coastal North Carolina grossed $325.6 million in 1978. This figure includes all revenues generated by and spent on commercial and recreational fishing; vessel and boat construction, operation and maintenance, shore facilities including fish houses, processing facilities, piers, marinas and seafood restaurants.

For many years North Carolina's commercial fleet has been dominated by small boats and vessels up to 40 feet in length with crews of one or two fishermen. Principal target species are shrimp, blue crabs, oysters, clams, croaker and sea trout. The major fishing areas are located in Albemarle, Pamlico and Core sounds and their tributaries, New River, Cape Fear River, and the rivers and creeks of Brunswick County, west of the Cape Fear River. In general, North Carolina's commercial fisheries are characterized by a large number of small fishing vessels which take a variety of species which vary considerably in seasonal abundance. Virtually all commercial fishermen utilize a variety of gears throughout the year in pursuit of several different species.

TEACHER PREPARATION

1. Duplicate 5 copies of the species of fisheries. Cut out and paste the pictures of the different species onto the side of 3" x 5" index cards. On the reverse side of the cards, write the poundage. Use the "Fisheries Poundage Chart" for realistic figures. For example: prepare 5 flounder cards: on the back of one record 19,716 lbs.; on a second card record 8,088 lbs, and etc. until the total poundage represented on the 5 flounder

cards equals 50,554 pounds. This represents the number of pounds of flounder that may be caught off the coast of North Carolina in one day. Then prepare 5 cards for each of the other species of fisheries.

2. Have the students color the animals on each card. If you wish to make the cards more permanent, laminate them.

3. Attach a paper clip to each card so that the cards can be picked up with a magnet.

4. Construct a backdrop for the fishing activity. A piece of poster board painted to resemble the ocean will be fine.

5. Duplicate 5 copies of Table 1 and Table 2.

STUDENT PREPARATION

1. The majority of students may aid in preparing the fishery cards.

2. Two students may prepare the backdrop for the fishery activity.

3. A second pair of students can construct a fishing pole. Use a dowel rod, meter stick, or cane for the pole. Tie a 60 cm. length of string on the end of the pole. To the free end of the string, attach a magnet.

ACTIVITIES - Dockside Value of Fisheries

1. Divide the class into 5 crews.

2. Have each crew elect a captain and select a name for their fishing boat.

3. The captain of each crew will go to the center and fish with the magnet until 5 index cards have been removed. These cards represent the crew's catch.

4. Each crew will duplicate procedure 3 until all the crews have "landed" their catch.

5. Each crew should utilize the fishery prices per pound in Table 1 to determine the value of their landings. They should group their landings by categories and complete the Table 2 entitled Dockside Value of Each Crew's Haul.

6. Have each crew compute how much each member would make from the earnings. Each captain makes 2 shares and each member makes one share.

QUESTIONS

1. Which crew made the most money this trip?

2. Which crew landed the most finfish? Crustaceans? Mollusks?

3. What factors affect how much poundage a crew is able to land?

4. (a) What factors affect how much profit a fisherman makes?

   (b) What are some costs that a fisherman would have?

5. Discuss the effect of the following factors on the fishing industry.

   (a) Price of gasoline and diesel fuel

   (b) Amount of rainfall - freshwater lowers the salinity in estuarine waters

   (c) Minimum wage

   (d) Location of seafood processing plants

   (e) Location of fishing ports

Lesson Number: 3
Skills: Organizational,
Manipulative,
Measurement

SEAFOOD AND NUTRITION

LESSON CONCEPT

Seafood is a good source of protein, iodine and Vitamins A and D.

COMPETENCY GOALS

1. The learner will classify foods according to the four basic food groups.
2. The learner will demonstrate knowledge of the relationship between food consumption and health.
3. The learner will comprehend the relationship between food selection patterns and dietary needs.

OBJECTIVES

1. The learner will use instruments to measure ingredients.
2. The learner will understand that seafood has great nutritional value.

MATERIALS

hot plate (or cafeteria stove)
large cooking pot
salt & pepper
large serving spoon
transparencies made from Tables 1 & 2
ingredients for clam chowder (see recipe under ACTIVITIES)
plastic bowls and spoons
frying pan

BACKGROUND INFORMATION

There are a number of nutritional qualities about seafood that make it a good alternative to beef, pork and poultry. Seafood is a complete protein. About 1/3 of the protein eaten daily should come from an animal source in order to balance less complete protein food in cereals and vegetables. An average serving of most seafoods furnishes more than enough complete protein to meet the daily needs of the body.

Seafoods contain a generous amount of such nutrients as calcium, iron, potassium, phosphorous, copper, iodine, magnesium, cobalt and other minerals. Fish products provide adequate amounts of the B family of vitamins and are also good sources of Vitamin A and D. The fat content of seafood is very low when it is cooked by means other than frying. A 3 1/3 oz. serving of finfish has 101 calories; crab, 81; shrimp, 158; pork chops, 198; and beef, 303. The small amount of fat in seafood is unsaturated, low in cholesterol, easily digested and is easily used by the body tissues.

Seafood may be classified into two main categories: finfish and shellfish (mollusks and crustaceans).

TEACHER PREPARATION

1. Obtain a hot plate for cooking the chowder or secure permission from the school cafeteria manager to use the cafeteria stove during a time of the day when it is not needed for school lunch preparation.

2. Obtain the ingredients for clam chowder and a cooking pot.

3. Assign reading in chapters of health and science texts on nutrition and food groups.

STUDENT PREPARATION

You may wish to have a number of students bring ingredients for the chowder from home. For example, every student may bring a potato, a plastic bowl and spoon. Individuals may bring from home salt, pepper, two bay leaves or even a can of clams.

ACTIVITIES

A. Nutrition of Seafood

   1. List the food groups on the chalkboard; ask the students to help you.

   2. Identify the foods under each group.

   3. Ask to which group do seafoods belong?

   4. Introduce the word "nutrient." What nutrients do seafoods supply?

   5. Show a transparency of Table 1 and discuss the nutrition of seafoods.

6. Show a transparency of Table 2 and discuss the protein and caloric content of seafoods compared with other sources.

B. Preparing Seafood

CLAM CHOWDER (20 or more servings)

1 gallon of milk	1 lb. bacon
1 stick of margarine	2 7 ox. cans of clams or
4 large onions, minced	2 dozen in shells, minced
4 stalks of celery, minced	salt & pepper

Fry bacon. Drain bacon and crumble. Put potatoes, onions, celery and milk into a large pot. Add milk and enough water to cover vegetables. Cook until the potatoes are done. Add margarine, clams and crumbled bacon. Cook 3-5 minutes until the clams are done. Serve hot.

1. Divide the class into 5 teams for the following assignments:

   Team I - Peel and cut up potatoes.

   Team II - Open clams and measure water.

   Team III - Fry and crumble bacon.

   Team IV - Peel and cut up onion.

   Team V - Add margarine, salt and pepper and tend the cooking chowder until it is done.

2. Serve the chowder to class members and enjoy a delicious seafood sample.

3. Have students bring copies of their family s favorite seafood recipe from home for sharing. If enough interest is shown, duplicate copies of recipes of seafood favorites.

4. The class may choose a second recipe for cooking and eating in class.

C Bulletin Board Ideas

1. Divide the class into groups of 2 or 3.

2. Give each group a type of seafood to research to find out its food value.

3. Each group draws their type of seafood large enough for a bulletin board display.

4. Make the bulletin board resemble an aquarium and place each seafood item on the board with its nutritional value printed on it.

5. See the other bulletin board ideas for use in your classroom or hallway space.

Lesson Number: 4
Skills: Organizational,
Measurement,
Manipulative,
Communicative

SAND CITY REAL ESTATE

LESSON CONCEPT

The buying and selling of property in coastal areas is an important part of the coastal economy.

COMPETENCY GOALS

1. The learner will refine the ability to follow directions.
2. The learner will demonstrate skill in computation commensurate with his/her mental maturity.
3. The learner will organize and analyze information and draw conclusions.

OBJECTIVES

1. The learner will compute 1% of the purchase of a piece of property in order to buy the property from the bank.
2. The learner will simulate money transactions involving the buying and selling of commercial and residential property.

BACKGROUND INFORMATION

The price of property on or near the coast is relatively expensive. A property lot size can range from 50' x 100' to 200' x 200'. A standard size lot is 100' x 200'. A lot which is 50' x 100' might sell for an amount ranging from $40,000 to $50,000. The average price per square foot of an ocean front lot ranges from $500.00 to $750.00. A 100' x 200' ocean front lot will cost from $50,000 to $100,000. Erosion of ocean front property is a problem that many owners must face. Homes that are built too close to the sea may be destroyed after a major storm or the land may wash out from the support beams of the house - causing the house to collapse.

Property on the sound side is lower priced land. The lot sizes vary as to ocean front property. The average lot is 100' x 200' and might cost from $25,000 to $37,000.

Smaller lots are sold between the sounds and ocean front property. This dune property is organized into housing developments. The lots are smaller than ocean front and sound lots. They range from 50' x 100' to 100' x 100'. Prices start at $10,000 and may go as high as $20,000.

Property is divided into zones. There are residential zones and commercial zones. Residential property is reserved for homes and commercial property is reserved for businesses.

TEACHER PREPARATION

1. Enlarge the gameboard by using an opaque projector or an overhead projector and a transparency. Have several students color the board to make it more attractive. Laminate the board for future use.

2. Make copies of the paper money. Use a different color for each denomination of money to help the students recognize the values. Cut the money out and place in the correct order.

3. Let the children decide upon what token they would like to use, buttons, paper clips, pencil erasers, etc.

4. Make copies of the Residential Cards and the Commercial Cards. Cut them out and laminate them for future use.

ACTIVITIES

Play the Sand City Real Estate game. Let the students play in small groups of 2, 4 or 6.

Lesson Number: 5
Skills: Organizational, Communicative

COASTAL COSTS & BENEFITS

LESSON CONCEPT

Human activities have both environmental costs and benefits which need to be examined.

COMPETENCY GOALS

1. The learner will organize and analyze information and draw conclusions.

2. The learner will identify and define problems and suggest ways of solving them.

OBJECTIVE

The learner will decide whether a coastal activity should be permitted to occur based on a cost-benefit analysis.

MATERIALS

chalkboard

BACKGROUND INFORMATION

This activity helps students to begin developing rational decision-making skills. A helpful technique for comparing costs vs. benefits is to list both in adjacent columns as suggested in the activity below. Then look for listings in either column which have equal weight and would cancel each other out. You might find two costs that cancel out one of the benefits or vice versa. As listings are cancelled, a line should be drawn through them. It should be pointed out that since the pros and cons of a decision are weighed differently by every person, cost-benefit analysis is not necessarily objectively accurate. The value of this analysis is in helping students measure their own feelings in relation to their classmates on certain issues.

SAMPLE COASTAL ACTIVITIES

Driving four wheelers and dune buggies on the beach

Filling in salt marshes for development

Building a new bypass highway

Installation of a sewage treatment plant

Picking sea oats

Development of a convention center

Building high rise condominiums

Building a new airport

Development of a new national park

Running up and down sand dunes

Commercial fishing from the beach

Bulldozing down foredunes to improve the view

Building another bridge from an outer bank island to the mainland

Development of a seafood industrial park

Stabilizing an inlet

ACTIVITIES

On the board, make two columns labeled as shown below.

COASTAL ACTIVITY	
BENEFITS	COSTS

With the entire class participating, choose a human activity which occurs in the coastal zone and write it at the top of the chart. Then have the class brain storm a list of benefits and costs of the activity making sure to consider impacts to both the human and non-human environment.

GUIDELINES FOR BRAINSTORMING

1. *No judgements are made as students contribute ideas.*
2. *Everyone is encouraged to verbalize any ideas that come to mind.*
3. *Quantity is encouraged.*
4. *Piggyback ideas by combining or modifying previous suggestions.*

After the list is generated, ask students to compare the benefits and costs, looking for listings which have equal weight. Have students come to the chalkboard one at a time to draw a line through the benefits and costs whose impact cancel each other out. Continue this process until either the entire list of benefits or costs is crossed out.

At this point the students may vote on whether or not to permit the activity to occur in the coastal zone. If they vote against it, have them suggest alternative activities.

ALTERNATIVE/VARIATION

Each benefit and cost could be given a numerical value on a scale from 1 to 5. Thus a ratio of benefits vs. costs could be derived. A ratio (benefit/cost) greater than one would indicate that the activity is worthwhile. A ratio less than one would indicate that an alternative activity should be considered.

ENRICHMENT

Have the students choose an activity in their group and perform a group cost-benefit analysis on it. They could present the results to the class.

REFERENCES

Simon, Sidney B., Leland W. Howe and Howard Kirschenbaum. Values Clarification: A Handbook of Strategies for Teachers and Students. New York: Hart Publishing Co., Inc. 1978.

Lesson Number: 6
Skills: Communicative,
Creative

CAREER CAPERS

LESSON CONCEPT

The careers of coastal residents are often affected by tourism.

COMPETENCY GOALS

1. The learner will be able to listen critically in order to draw conclusions and make judgements about content and performance.
2. The learner will be able to listen creatively in order to develop solutions to problems and to formulate new ideas.
3. The learner will be able to compose a piece of writing with an appropriate beginning, middle and end.

OBJECTIVE

The learner will demonstrate his/her knowledge of tourism and its affect on coastal livelihoods through writing activities and class discussions.

MATERIALS

7 copies of the play "Journey's Inn" (1 per actor)
paper and pencil

ACTIVITIES

1. Students will act out Scene I of the play "Journey's Inn."
2. When scene I is finished follow with a discussion on careers and tourism. Examples for discussion follow:
   a. Name some careers in our area which are affected by tourism.
   b. Do seasons affect these careers? Which ones? How?
   c. Do special holidays affect these careers? Which ones?

d. What are some problems you might encounter if you had one of the following careers: restaurant manager, gift shop owner, outdoor drama technician, park ranger, food store owner, clothing store salesperson, motel manager, linen service operator, head boat captain, waiter/waitress, bait and tackle shop owner or marina operator.

3. Ask students to write their version of Scene II, a sequal to Scene I. Students should keep the same characters for motel personnel and select new customers for their scenes.

   EXAMPLE:

   The waiter whose customer has a fish hook in his soup.

   The motel customer with a baby boa constrictor.

4. Allow the students to choose classmates for characters and to take turns at directing their scenes.

Lesson Number: 7
Skills: Manipulative, Creative

A SHELL WAS ONCE A HOME

LESSON CONCEPT

There are many crafts which are associated with the coastal area of North Carolina, many of these begin with shells.

COMPETENCY GOALS

1. The learner will develop creative skills.
2. The learner will develop concepts of art.
3. The learner will develop concepts of principles of design (proportion, balance, rhythm, unity).

OBJECTIVES

1. The student will be able to use shells for creative interpretation.
2. The student will be able to recognize the principles of design and their application in nature and man-made objects.

MATERIALS

shells (or material for making shell figures as newspaper that has been shredded, construction paper, felt, glue etc.)
tempra paint
brushes
driftwood or paper mache materials
monofilament fishing line
strong binding glue
cardboard or dime store frames
spray shellac

TEACHER PREPARATION

1. Obtain shells (scallop, oyster, clam). These can be found at a seafood market or on the beach. Scallop shells are the best, but usually more difficult to find inland. If there is an oyster bar near your locale, they will probably supply more than you need.

As a last resort, go to a restaurant and ask for them. Also gather smaller shells for Activity C.

2. If students wish to make mobiles in Activity B, drill holes in them prior to painting.

3. Obtain driftwood from the seashore, sounds or riverbanks for Activity B. If you have no access to driftwood - make it out of paper mache or use an interesting tree limb. If there are no shells in your area, have students cut shells from felt or construction paper, slightly stuff with shredded newspaper and glue them together.

ACTIVITIES

A. Shell Painting

1. Cover desks or working space with newspaper.

2. Have students wash and thoroughly dry the shells.

3. Students should sketch their designs on the shells with a pencil and then paint them with tempra paint.

B. Making Mobiles

1. Involve students in selecting a theme for a class mobile.

2. Divide the class into 10 to 12 groups; each group will then design and paint a shell for the mobile.

3. If you cannot obtain driftwood, use a tree limb or have one group of students construct a paper mache limb.

4. Allow one group to assemble and balance the mobile.

C. Shell Creatures

1. Clean and dry shells thoroughly.

2. Students may glue any number of shells, as available, to form animals, etc.

D. Shell Frames

1. Cut the cardboard to the desired size or use picture or mirror frames from a dime store.

2. Clean and dry shells thoroughly.

3. Glue shells at random, filling in all spaces on the frame.

Lesson Number: 8
Skills: Manipulative,
Creative

SAND ART

LESSON CONCEPT

Sand may be used for many craft products, including sand candles and sand paintings.

COMPETENCY GOALS

1. The learner will develop positive attitudes toward self.
2. The learner will develop concepts of elements of art (line, texture, color, shape, form, space).
3. The learner will develop concepts of principles of design (proportion, balance, rhythm, unity).
4. The learner will develop creative skills.

OBJECTIVE

The learner will use sand in creating sand candles and paintings.

MATERIALS

for candles:

- ½ pt. milk cartons
- popsicle sticks
- paraffin wax
- wax crayons
- string
- stearine

for coloring sand:

- sand
- paper cups
- water
- food coloring or fabric dye
- paper towels
- newspaper

for painting:

- heavy drawing paper
- pencils
- sand
- glue
- paint brush

TEACHER PREPARATION

1. Obtain materials for making candles and sand paintings.
2. CAUTION: The teacher should be in charge of melting and pouring wax at all times.

STUDENT PREPARATION

1. Have students collect, wash and drain ½ pt. milk cartons from the school cafeteria.

2. Have students collect and clean popsicle sticks.

ACTIVITIES

A. Making Sand Candles

1. Open up the milk cartons and cut off the tops to make small open boxes.

2. Pour sand into the milk carton boxes.

3. Dampen the sand by adding a small amount of water a drop or two at a time.

4. Students should be encouraged to shape a candle mold space in the sand to resemble a marine organism such as a fish or a sea turtle.

5. Tie a short string around the middle of a popsicle stick.

6. Rest the popsicle stick on the edges of the milk carton so that the string will hang down in the space to form the wick.

7. The teacher should melt the paraffin in a pot with a pouring lip on a hot plate at one end of the room. The melting point for wax is about 200°F. You may use a candy thermometer to check the temperature.

8. Drop pieces of crayon into the wax to obtain the desired color. Stir with a clean stick or glass stirring rod. Add stearine (according to the package directions) to obtain desired opaqueness.

9. When the wax is molten, and the students' sand molds are ready, the teacher should move around the room carefully pouring the molten wax into the molds.

10. When the wax is set and cooled, remove the candle from the mold by the popsicle stick. Cut the wick to about 1" long. Brush any free sand from the candle.

B. Coloring Sand

1. Fill paper cups half full with sand.

2. Add water to each cup to cover the sand.

3. To color the sand, add powdered fabric dye or drops of food coloring to the water and sand. The more coloring you add, the deeper the color of the sand will turn.

4. Stir the sand, water and dye mixture with a plastic spoon.

5. Let the sand sit in the coloring for 15 minutes.

6. Pinch the edge of the cup to make a spout for pouring out the water.

7. Spoon the damp colored sand onto paper towels placed on several thicknesses of newspapers.

8. Allow the sand to dry for several days.

C. Making Sand Paintings

1. Encourage students to draw designs and shapes on heavy paper.

2. Pour liquid glue into small paper cups.

3. Students then fill in one of the design shapes with glue using a paint brush.

4. Sprinkle one color of dyed sand over the glued area.

5. Tip the sheet over a piece of newspaper or paper towel to remove the excess sand.

6. Repeat this procedure until all of the designs in the painting have been filled in with sand.

Lesson Number: 9
Skills: Manipulative,
Measurement,
Creative

NAUTICAL KNOTS

LESSON CONCEPTS

1. Knot tying is an art which has been spread to many parts of the world by sailors.

2. Knot tying plays an important role in everyday activities.

COMPETENCY GOALS

1. The learner will develop manual skills.

2. The learner will exhibit competency in identifying and using standard units of measure.

3. The learner will refine the ability to follow directions.

OBJECTIVES

1. The learner will be able to demonstrate special manipulative skills using rope or cord.

2. The learner will demonstrate ability to measure accurately in centimeters.

3. The learner will be able to identify various nautical knots and the functions of each.

VOCABULARY

knot - a tie made in a rope
hitch - a knotting technique used in attaching a rope to another object such as a post or ring
bend - a knotting technique used in uniting two ropes so they will stand the strain of being used as one rope

BACKGROUND INFORMATION

Knots have played an important part in the lives of native Indians as well as the early settlers, used in fishing, hunting, the trapping of wild animals and in harnessing the tame ones. The knotting together of vines, grasses, sinews, and leather must have been one of the earliest craft forms used in securing canoes, rafts and huts and also for dress. Even in today's sophisticated society, knots are still used in domestic and professional life. The housewife, the nurse, the surgeon, the sailor, the mountain climbers, the butcher and the fisherman all have their specialty knots.

Decorative knotting as we know it today was originally practiced between the 14th and 16th centuries in southern Europe. Sailors were responsible for spreading decorative knot tying or macrame to many parts of the world. Decorative knot tying has been done at sea since the days of the galleys. Usually, one half the crew rowed while the other half rested. During their leisure time, the sailors would make knotted articles which they would then trade (barter) when their ship came into port.

Macrame (Sailor's lace) was very popular with the English Royal Navy when quarters were cramped and large work was difficult. Macrame (or square knotting as it was also called) could be carried out with fishing line and fine twines and was made into articles to decorate the ship, such as fringes for sea chest covers, tablecloths and screens.

TEACHER PREPARATION

Duplicate sheets which illustrate the knots that are to be tied.

STUDENT PREPARATION

Students should bring a section of cardboard approximately 30 cm. x 42 cm. from home.

ACTIVITY I - Knot Tying

Materials: pieces of cardboard (1 per student)
#18 or #21 Seine Cord (several balls of cord depending on class size)
scissors (1 per student)
felt tipped pens (for labeling)
Copies of Directions for Tying Knots

Procedure:

1. The teacher should review the basic units of metric measurement as they appear on a ruler.

2. Have each student cut 5 cords 45 cm. long and 2 cords 15 cm. long. These will be used to tie 6 basic nautical knots.

3. The students should mark and cut cardboard as shown in the example of a Knot Demonstration Board.

4. The teacher should distribute sheets containing pictures of sample knots. Review the use of each type of knot. Have students cite examples of how each knot might be used in everyday tasks. (KNOTS - vocabulary may be developed here.)

5. Guide students step-by-step through the tying of the various knots. (Knot Number 6 should be done off the knotting board, using the 2 15 cm. lengths of cord, and then mounted.) Label each knot after knotting, trim the ends.

QUESTIONS

1. Which knot is the most common? Should it be used to join different sizes of rope? If not, what could be used?

2. What is the function of the clove hitch?

3. Differentiate between a hitch and a bend.

ACTIVITY II - Making a Macrame Wrist Band

Materials: #18 or #21 Seine Cord
small 1 cm. beads (1 per student)
straight pins
pieces of cardboard, 30 cm. x 45 cm. (1 per student)
rulers
scissors

Procedure: Cut 4 cords 140 cm. long.

2. Fold cord in half and mount.

3. Bring the cord on the far left across to the right.

4. Half hitch the remaining cords on the horizontal cord. Make sure the loops at the top are not too small. To form a wristband, knots must fit snuggly in the loops.

5. Tie 8 rows of alternating square knots ending with a center knot.

6. Tie 2 square knots on each side.

7. Run the 4 center cords through a 1 cm. bead.

8. Tie 2 square knots on each side.

9. Tie 8 rows of alternating square knots.

10. To finish bring the right cord across to the left side and half hitch the others on to this cord.

11. Hold cords tightly and tie every two cords together in a knot close to the half hitching.

SOURCES

Gonslaves, Alyson S. ed. Macrame. Menlo Park: Lane Publishing Company, 1975.

Dutch, Ed. How To Tie Nautical Knots. PWD leaflet 900-28. June 1977.

Lesson Number: 10
Skills: Manipulative,
Creative

SCRIMSHAW

LESSON CONCEPT

Scrimshaw is an artform developed by sailors.

COMPETENCY GOALS

1. The learner will develop concepts of elements of art (line, texture, color, shape/form, space).
2. The learner will develop concepts of principles of design (proportion, balance, rhythm, unity).
3. The learner will develop manual skills.

OBJECTIVES

1. The learner will use the elements of art in creating a piece of scrimshaw.
2. The learner will develop skill in controlled manipulation.

MATERIALS

milk cartons (1/2 pt.)
popsicle sticks
plaster of Paris (drugstore)
water
paper towels or toilet tissue
paper cups (8 oz.)
paper clips
black tempra paint
paint brushes

VOCABULARY

scrimshaw design graphic incision

BACKGROUND INFORMATION

The Scrimshaw Connection

The origin of scrimshaw is uncertain. Prehistoric man made hieroglyphic scribblings upon mammoth tusks. The ancient civili-

zations of Egypt, Mesopotamia and Babylon left priceless carved ivory treasures. The Chinese and Japanese have been known since recorded history for ivory carvings and inlay work. Eskimo art, including etched ivory objects, has flourished for at least a thousand years.

The term "scrimshaw" was probably created by the Yankee whalemen during the Golden Age of whaling. Some speculate that whalemen learned the art when survivors of ships trapped in the ice spent the winter with the Eskimo natives.

On long voyages, bored with their surroundings and the monotony between catches, sailors with skill turned to scrimshaw. Sailors would etch pictures and carve designs on whalebone and sperm whale's teeth. Often the pictures were of things that sailors were familiar with, such as a full rigged sailing ship, sailors, a girl back home, a stormy seascape, or even a scene of whalemen in a whaleboat encountering a ferocious sperm whale.

Scrimshawing

The talented whalemen spent their spare time working ivory or bone with their jackknives. The ivory most often consisted of sperm whale's teeth and bone sawed from the panbone, the lower jawbone of the sperm whale. Some carvers used "baleen" or whale bone from the upper jaws and palates from whales.

Today, certain laws prohibit the shipping and selling of such materials from the endangered species over state and national borders. The next generation of scrimshanders will have to work with different materials, perhaps shell, different types of bone, soapstone and plastic.

The simplest type of scrimshaw to make is a graphic. It is a plain surface with an incised design. The whalemen would scrape the surface of the tooth or bone smooth with a jackknife. Then etch the graphic with a knife or sailor's needle. They would polish the etched bone or tooth with sharkskin or by rubbing it with their hands. They would color their designs with soot, lampblack, tobacco juice, paint and sometimes blood.

TEACHER PREPARATION

1. Collect the materials needed for the scrimshaw activity.
2. If available, display examples of scrimshaw.
3. Discuss with the class the information on scrimshaw.
4. Allow the students to make their own piece of scrimshaw out of plaster cakes. Encourage the students to use simple designs. Too much detail will be difficult to etch.

STUDENT PREPARATION

Have students to collect milk cartons and popsicle sticks from the school cafeteria and rinse them thoroughly.

ACTIVITIES - Making Scrimshaw

1. Divide the class into convenient working teams of 4 to 5 students.
2. Each team should make plaster of Paris cakes as follows:
   a. Set up 4 to 5 paper cups.
   b. Mix 1/2 cup of plaster of Paris and 1/3 cup of water in an empty milk carton.
   c. Stir the mixture with a popsicle stick until it is thick and smooth. Work quickly before it hardens.
   d. Pour the mixture about 1 cm. deep into the paper cups.
   e. Allow the plaster of Paris to harden for 15 minutes.
   f. Peel the paper from around the cakes to release them.
   g. These cakes will now become the material for scrimshaw.
3. Direct the students to straighten one end of a paper clip to make an etching tool.
4. Students should be encouraged to design their graphic on a piece of paper. Then transfer the image onto the plaster cake. A rough sketch may be made with a pencil before the etching process begins.
5. Students are then ready to etch their graphics with the paper clip tools. Be sure that the etched lines are sufficiently deep.
6. Direct students to brush the surface of their scrimshaw with black tempra paint. Allow the paint to dry.
7. Students should rub the surface of their scrimshaw to lighten the surface, but leaving the darker color in the etched lines.

Lesson Number: 11
Skills: Manipulative,
Creative

WOOD CARVING

LESSON CONCEPTS

1. Wood carving as a craft has been practiced by coastal inhabitants for many years.
2. Wood carving has served many purposes to coastal inhabitants.

COMPETENCY GOALS

1. The learner will develop concepts of elements of art (line, texture, color, shape/form, space).
2. The learner will develop concepts of principles of design (proportion, balance, rhythm, unity).
3. The learner will develop manual skills.

OBJECTIVES

1. The learner will use the elements of art in carving.
2. The learner will develop skill in working with his/her hands.

MATERIALS

large bars of soap
table knife
tempera paint (optional)
water
small paint brushes (optional)

VOCABULARY

Figurehead - a carved figure placed on the bow (front) of a ship for decoration.

STUDENT PREPARATION

Have students bring from home two large bars of soap and a table knife or sturdy plastic knife.

BACKGROUND INFORMATION

The art of wood carving is as ancient as man's recorded history. For coastal inhabitants, carving has served many purposes. In ship construction, elaborate wood carvings served for decoration. The figurehead on a ship was believed by sailors to have mystical powers of bringing good luck.

Because of the large numbers of waterfowl in coastal areas, decoys for hunters became a fine art. Tools and implements were often carved from wood. Oars, ax handles, wooden mauls, bowls, etc. were examples of such practical woodwork.

Another type of carving, often called whittling, was considered a leisure time activity practiced at sea as well as on land. Carvings could have religious themes, maritime themes, or could represent any variety of subjects. Wood, bone or ivory was often used as a carving material.

Carving has continued today as an art form. Many gift shops along the coast carry a wide variety of carved articles.

ACTIVITIES

CREATIVE CARVING

Encourage students to carve any object they desire from a bar of soap.

1. Students may use the plastic or table knife to carve the soap.

2. Students may paint their carved objects with tempera paints.

DECOY CARVING

Hand out copies of the directions sheet entitled "Decoy Carving."

REFERENCES

"How to Make Decoys." Sea Chest, Vol. I, 1:52-54, Spring-Summer, 1973.

Lesson Number: 12
Skills: Inquiry,
Manipulative

BOAT AND SHIP BUILDING

LESSON CONCEPTS

1. Boat and ship building on North Carolina's coast has been in existence for many years.

2. Boat and ship building is a livelihood for many coastal inhabitants.

3. Boat and ship building designs are dependent on many factors.

COMPETENCY GOALS

1. The learner will know that ways of living change over time and why and how these changes occur.

2. The learner will develop concepts of principles of design (proportion, balance, rhythm, unity).

OBJECTIVES

1. The learner will recognize that North Carolina's boat and ship building has been in existence for many years.

2. The learner will recognize the importance of boat and ship building to many coastal inhabitants.

3. The learner will investigate the factors that affect boat and ship building designs.

BACKGROUND INFORMATION

Early boats and ships constructed on North Carolina's coast were mainly built for the purposes of catching finfish and shellfish and travel. Most were built and used by the men of the family for the purpose of feeding their families. As time passed, boats were built for other purposes. During the War Between the States several ships were built to keep open southern ports. In the early 1900's, air sea rescue boats up to 100 feet in length were made.

In addition to several shipyards located in such places as Elizabeth City, Manteo, Morehead City and Wilmington, many ship building operations were and still are family operations. The craft

involved in boat building has been passed on from generation to generation. Many boats were built by eye rather than by blueprint. Many of these family boat building operations have gained much prestige in the world of boat building even though they are small scale operations. North Caroina built boats are used all along the coast of the United States as well as other locations.

Boat types being built along North Carolina's coast vary from the small flat bottomed skiffs to the larger elaborately finished yachts. The intended use of the boat has a lot to do with its design. The boats to be used in the shallow sounds and rivers of North Carolina had to be of a type to not run too deeply in the water. Those designed for deeper ocean navigation were deeper hulled. Two types of common shallow water boats that were used in North Carolina's coastal sounds were the flat bottom skiff and the shad boat. The flat bottom skiff is a boat noted not for its frills but its varied purposes. It has been used for transportation, fishing, lobstering, crabbing or any of a number of other varied functions. The sources of propulsion for this boat are as varied as its uses. It can be rowed, poled or propelled by a motor.

The shad boat was used in the sound for fishing the huge schools of migrating shad. The sails of the shad boat were designed so that they could be easily raised and lowered. With the changeable weather of the sounds the ability to vary the amount of sail was very important. The shad boat was developed in North Carolina near Roanoke Island.

Until the gasoline engine was incorporated onto the ships, sails and oars were the primary source of power for ships and boats. Today, many boats and ships are returning to this cheaper form of energy. Old sailing ship designs are regaining popularity for their aesthetic as well as their practical nature.

MATERIALS

stapler	scissors
scotch tape	8" x 11" construction paper
pencil	poster board
ruler	

PROCEDURE

1. Hand out the assembly instructions given for each boat (shad boat and flat bottom skiff) and allow students to construct a boat of their choice.

2. After the students have constructed their boats, discuss the background information with them.

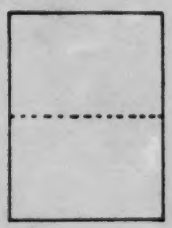
3. Involve the students in the following discussion:

   a. Describe the characteristics of the flat bottom boat that adapt it to shallow water. (For example: (1) flat bottom, (2) shallow rudder.)

b. Why was the ability to raise and lower the sails quickly important to the design of the shad boat? (Rapid wind change in the sounds.)

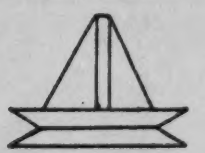
FISHING BOATS (Origami)

Cut out a piece of paper 2" x 3" to form an upright rectangle.



Fold the rectangle in half.

Fold the top of the paper to form a triangle. Leave a small bottom edge.



Fold up the bottom flaps on both sides of the triangle. Fold down the corners.

Open the bottom of the triangle and press the two points together to form a diamond.

Open the diamond at the bottom and fold up both edges to form a triangle.

Open the triangle and press the ends together to form another diamond.

Pull the top upper edges down and open up the paper boat. Shape the bottom of your boat so that it will stand up.

DIRECTIONS FOR THE FISHING GAME

The object of the game is to "catch" as many pounds of fish as possible. To catch the pounds of fish, the players move their markers through the course on the board. Hazards may befall a fishing boat any time a player lands on "!". Draw a HAZARD card and follow the directions on the card. A player catches pounds of fish by answering questions during the course of the game. Players fill in a Settlement Sheet to record their catch. At the end of the game, each player totals his/her catch by totaling the poundage.

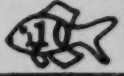
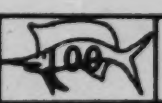
1. Each player can make his/her own paper boat token by following the directions. Write the name of the fishing boat on its side. Write the names of the boats on the Settlement Sheet.

2. Roll a die to determine the order of the players. Two, four or six students may play.

3. Take turns rolling the die and move the number of spaces indicated.

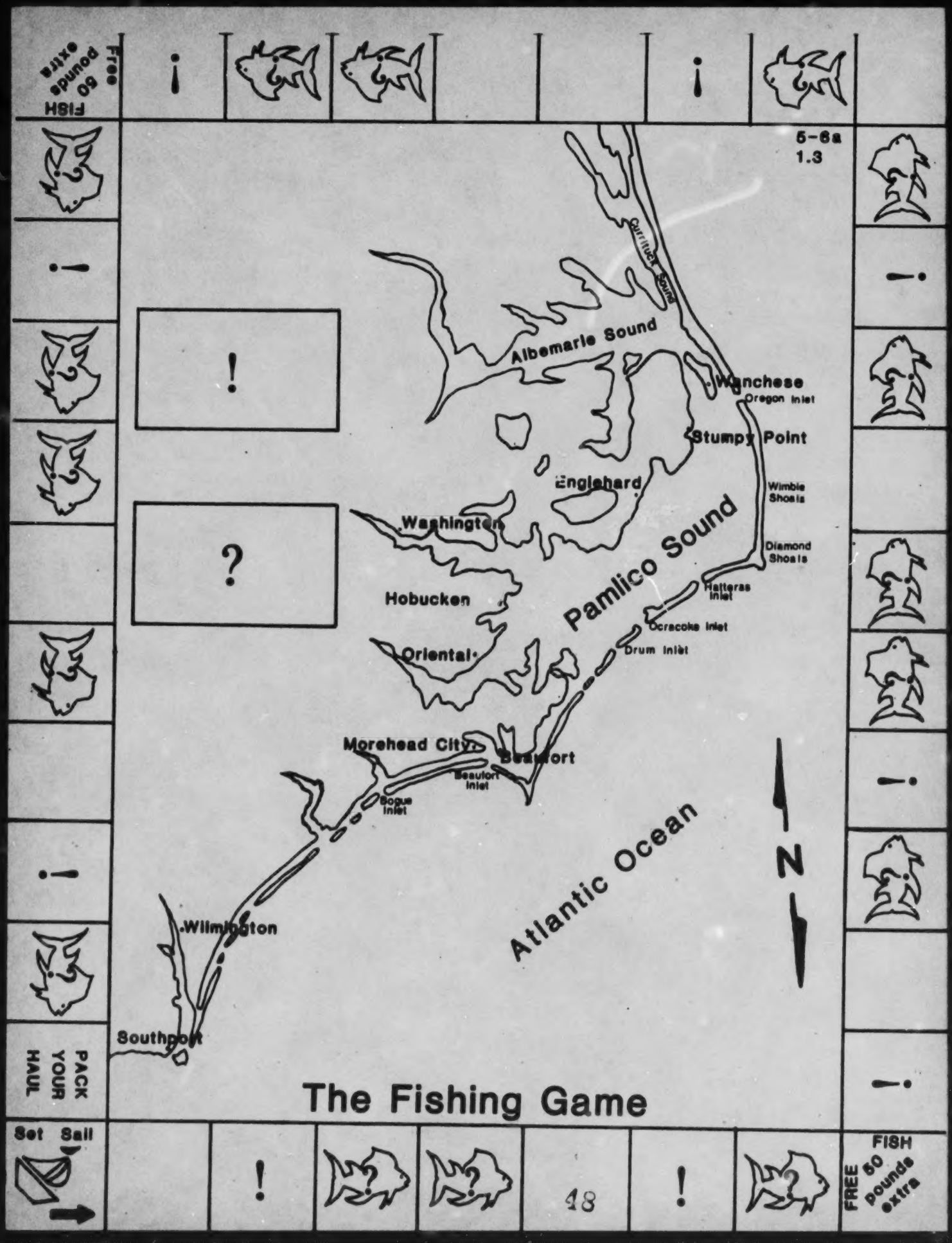
4. When a player lands on a space with a fish, draw a card and answer the question. Check the answer with the corresponding answer card. If the answer is correct, record the poundage of fish the player caught on the Settlement Sheet. Make a tally mark in the correct space beside the name of the player's boat according to the poundage of fish caught.

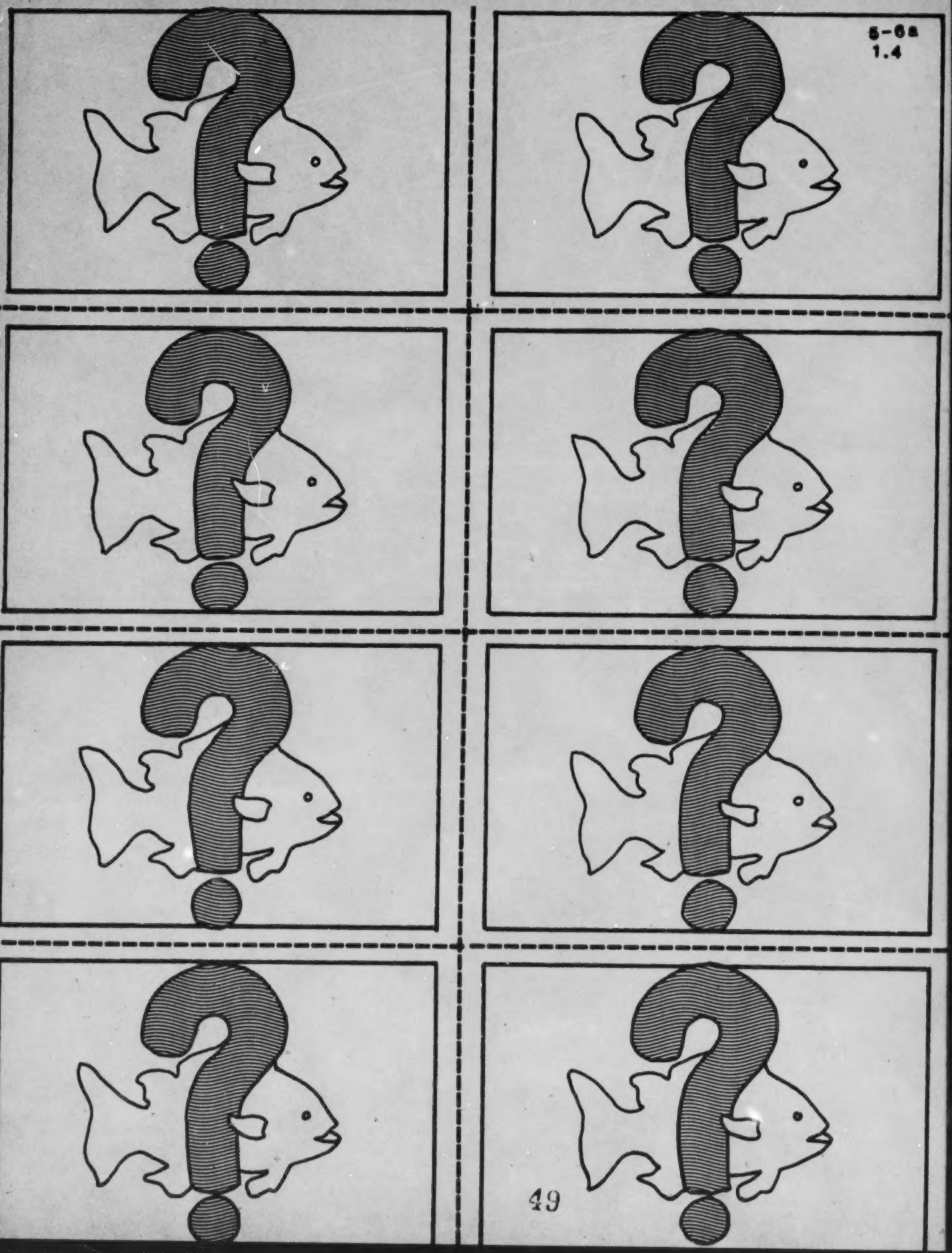
   EXAMPLE:

Settlement Sheet						
Boat Names						**Total**

5. When all of the question cards have been turned over, reshuffle them and begin again.

6. The game is over when all the boats have docked and packed their fish. Total the pounds of fish that each player was able to catch. The boat with the highest poundage of fish caught is the winner!


FISH
Free 50 pounds extra
5-6a
1.3
Currituck Sound
Albemarle Sound
Manchese
Oregon Inlet
Stumpy Point
Englehard
Wimble Shoals
Washington
Diamond Shoals
Pamlico Sound
Hatteras Inlet
Hobucken
Ocracoke Inlet
Oriental
Drum Inlet
Morehead City
Beaufort
Beaufort Inlet
Bogue Inlet
Atlantic Ocean
N
Wilmington
Southport
PACK YOUR HAUL
The Fishing Game
Set Sail
FISH
FREE 50 pounds extra
18


5-6a
1.4

1. Which port is located on the Cape Fear River?
(35 lbs.)

2. What is North Carolina's largest sound?
(40 lbs.)

3. On what island is Wanchese located?
(30 lbs.)

4. If you were caught in a storm while fishing off Cape Hatteras, which inlet would you enter for shelter?
(100 lbs.)

5. Why is North Carolina's coast so dangerous to navigate?
(75 lbs.)

6. Why is North Carolina's coast an advantage to fishermen?
(50 lbs.)

7. What are the two largest ports in North Carolina?
(35 lbs.)

8. Why is North Carolina's coast called the "Graveyard of the Atlantic?"
(80 lbs.)

9. Give a definition of a port.
(45 lbs.)

10. What is the definition of 'inlet'?
(60 lbs.)

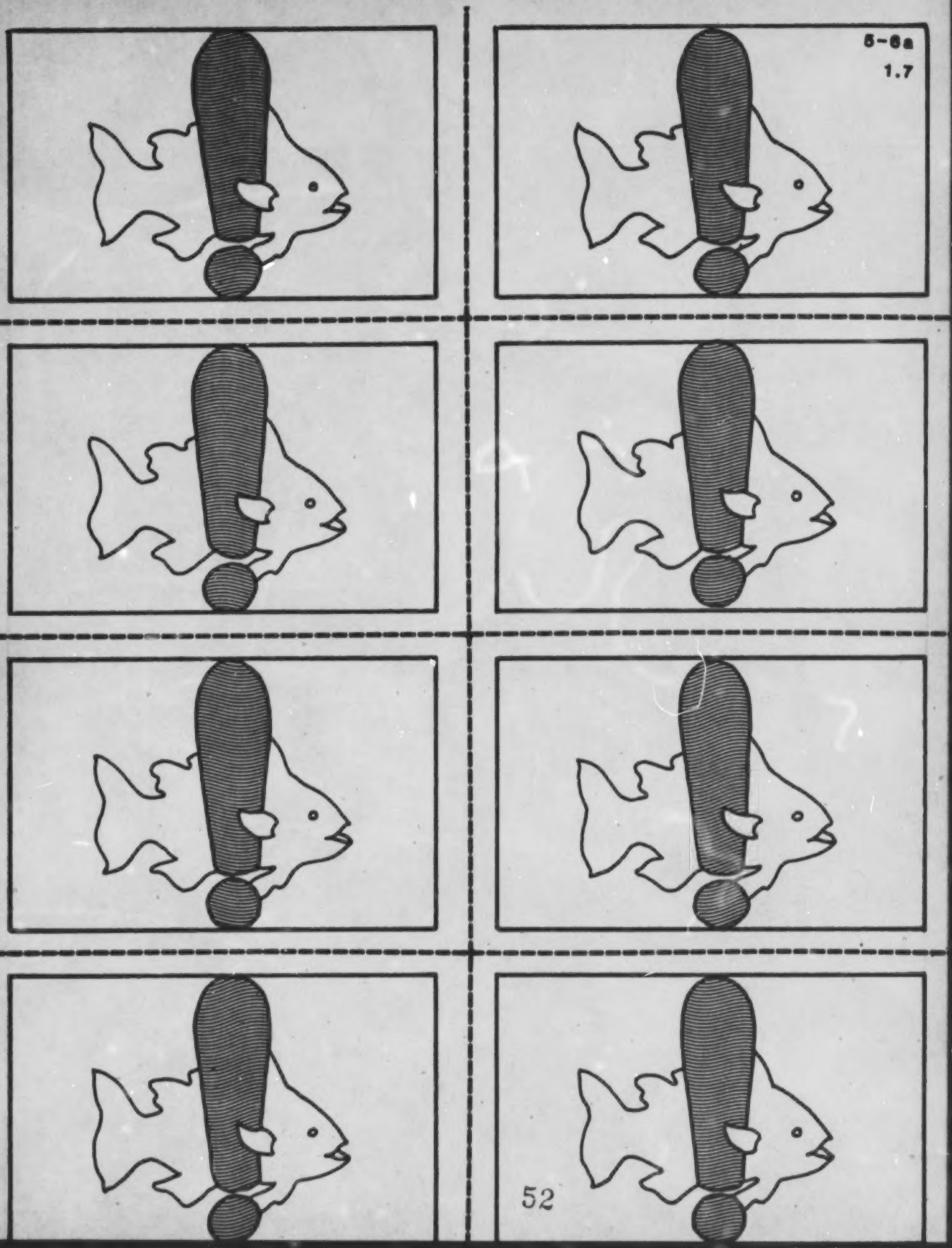
11. Why is inlet stabilization important to North Carolina's fishing industry?
(90 lbs.)

12. Why was North Carolina's coastline a haven for pirates?
(75 lbs.)

13. Why has Morehead City developed into a major port?
(80 lbs.)

14. What is the name of the north-east flowing current off North Carolina's coast?
(50 lbs.)

15. What is a sound?
(45 lbs.)


5-6a
1.7

TIDES ARE AGAINST YOU

GO BACK ONE SPACE

CURRENTS PUSH YOU BACK

GO BACK TWO SPACES

GOING AGAINST THE WIND

GO BACK TWO SPACES

STUCK IN SHALLOW WATER

LOSE ONE TURN

WATER SPOUT

GO BACK THREE SPACES

HURRICANE WARNING

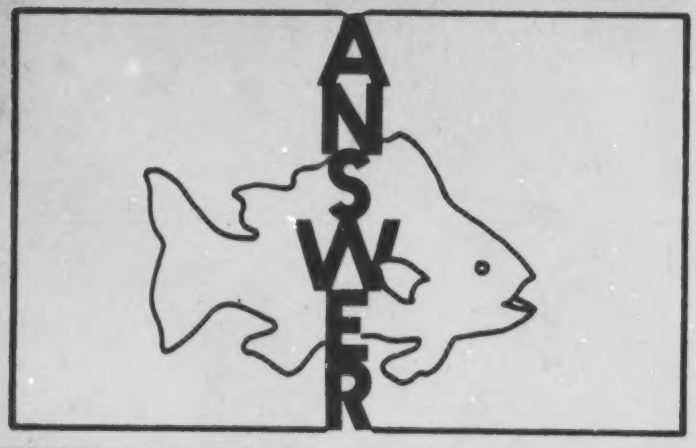
GO BACK THREE SPACES

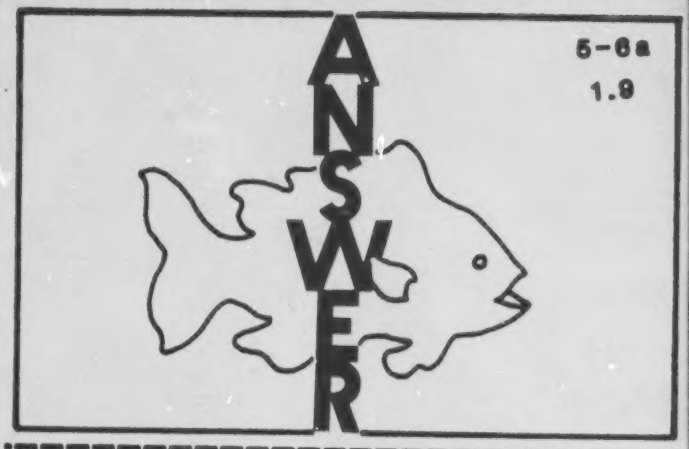
MAN OVERBOARD

LOSE ONE TURN

RADIO EQUIPMENT NEEDS REPAIR

GO BACK ONE SPACE





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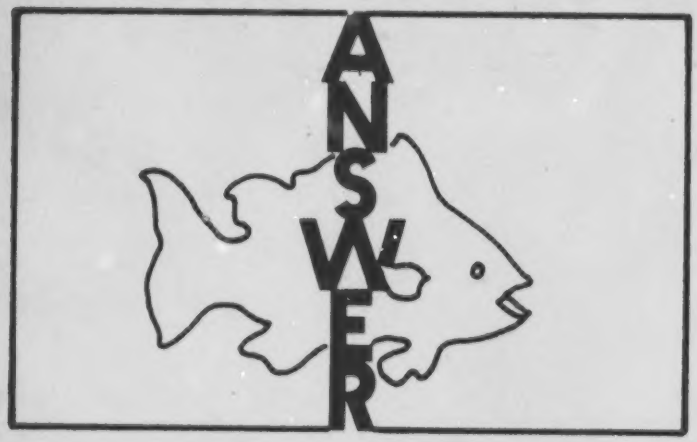
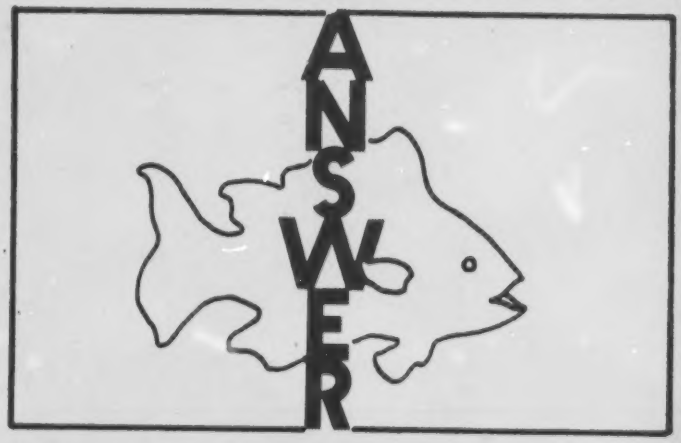
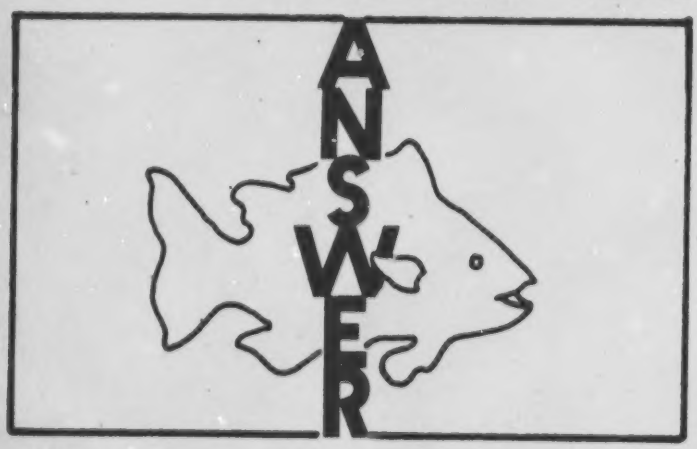
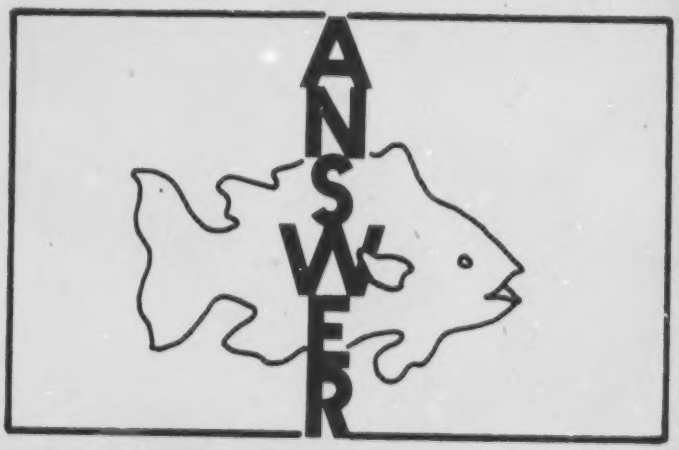
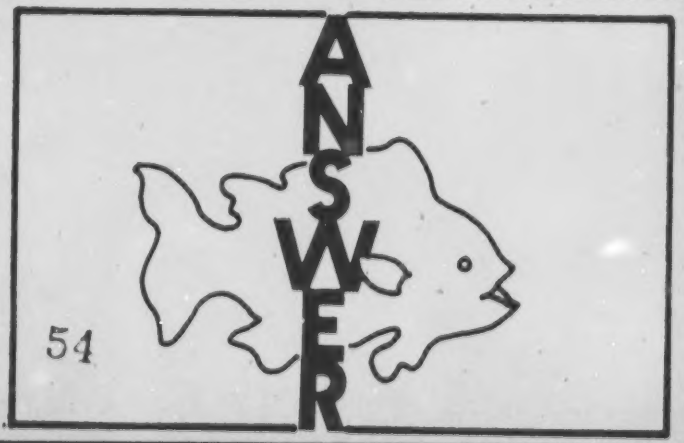










1. WILMINGTON

2. PAMLICO SOUND

3. ROANOKE ISLAND

4. HATTERAS INLET

5. SHIFTING SANDS, SHALLOW INLETS, IRREGULAR COASTLINE

6. PROTECTION FROM OCEAN IN INLETS AND COVES

7. WILMINGTON & MOREHEAD CITY

8. SO MANY SHIPS HAVE WRECKED IN THE PAST OFF NORTH CAROLINA'S COAST

9. A PLACE WHERE BOATS DOCK AND PACK THEIR FISH.

10. ACCESS TO THE OCEAN THROUGH THE BARRIER ISLANDS.

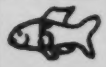
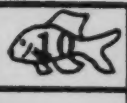
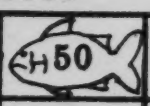
11. MOST OF NORTH CAROLINA'S PORTS ARE LOCATED ON THE MAINLAND AND MUST BE REACHED BY ACCESS OF AN INLET.

12. SHALLOW WATERS, COVES, INLETS, DESERTED LAND.

13. EASY ACCESS FROM THE OCEAN AND SOUND, A LARGE TOWN WITH MAJOR HIGHWAYS.

14. GULF STREAM

15. INLAND BODY OF WATER BETWEEN MAINLAND AND BARRIER ISLANDS.

Settlement Sheet						
Boat Names						Total

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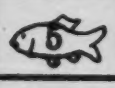
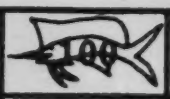
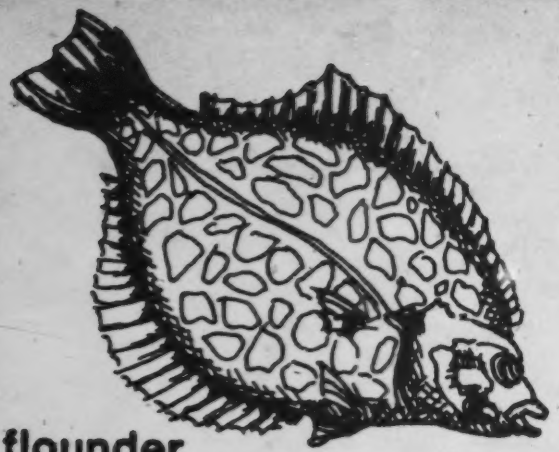
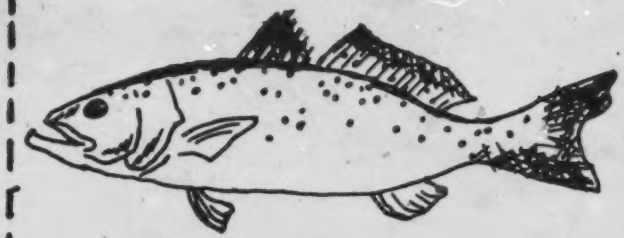
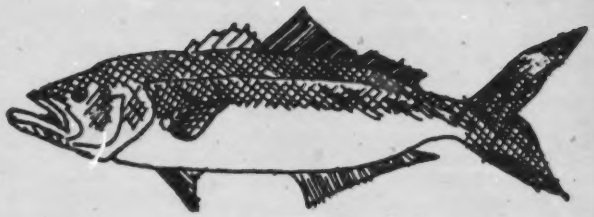
Boat Names						Total



flounder

sea trout

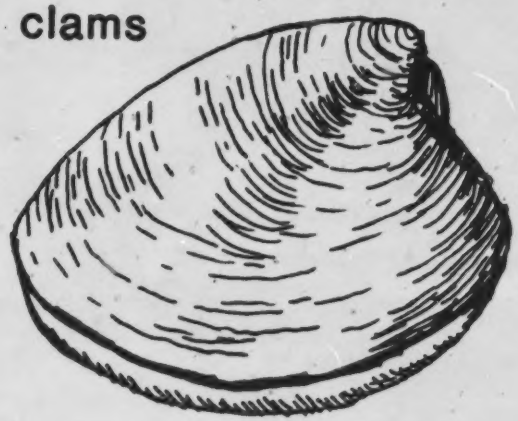




bluefish

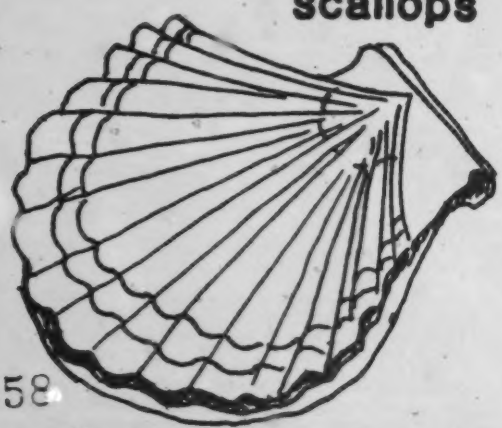
croaker

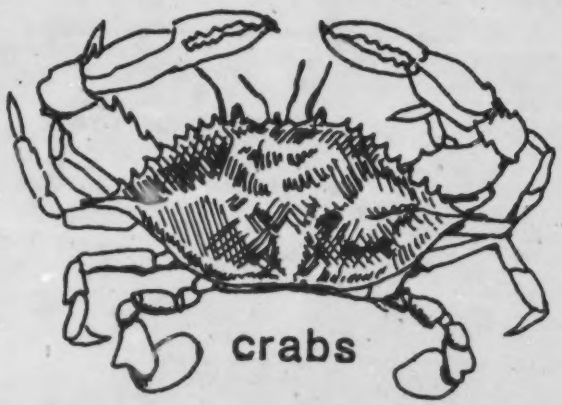
clams



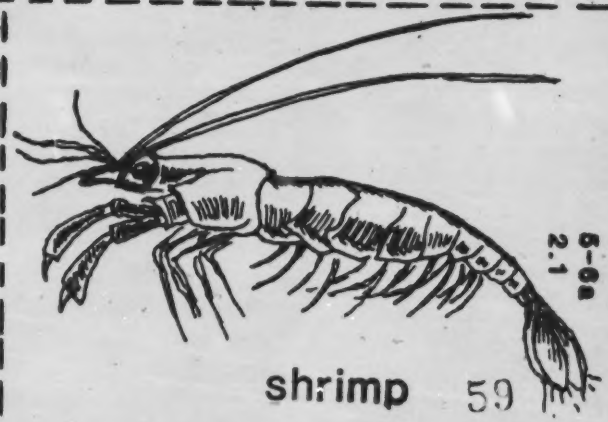
oysters

scallops





crabs



shrimp

FISHERIES POUNDAGE CHART						
SPECIES	CARD 1	CARD 2	CARD 3	CARD 4	CARD 5	TOTAL
Flounder	19,716	8,088	6,572	4,549	11,629	50,554
Sea Trout	15,770	6,469	5,256	3,639	9,302	40,436
Bluefish	3,639	1,492	1,213	839	2,148	9,331
Croaker	21,966	9,011	7,322	5,069	12,956	56,324
Clams	1,554	637	518	358	919	3,986
Oysters	710	291	236	164	422	1,823
Scallops	1,051	989	701	968	929	4,638
Crabs	28,441	11,668	9,480	6,563	16,775	72,927
Shrimp	5,279	2,166	1,759	1,218	3,116	13,538

TABLE 1. DOCKSIDE PRICES OF COMMERCIAL SPECIES

SPECIES	AVERAGE PRICE
Flounder	.42/lb.
Sea Trout	.20/lb.
Bluefish	.19/lb.
Croaker	.40/lb.
Clams	3.00/lb.
Oysters	1.35/lb.
Scallops	3.00/lb.
Crabs, Hardshell	.18/lb.
Shrimp	1.85/lb.

TABLE 2. DOCKSIDE VALUE OF EACH CREW'S CATCH

CREW (Name of boat in parenthesis)	FINFISH		CRUSTACEANS		MOLLUSKS		TOTAL VALUE
	AMOUNT	VALUE	AMOUNT	VALUE	AMOUNT	VALUE	
Crew #1 ( )							
Crew #2 ( )							
Crew #3 ( )							
Crew #4 ( )							
Crew #5 ( )							
TOTALS							

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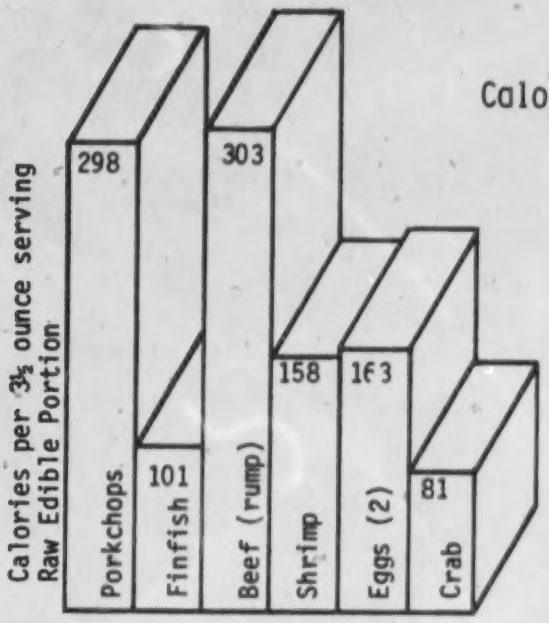
TABLE 1. SEAFOOD NUTRITION

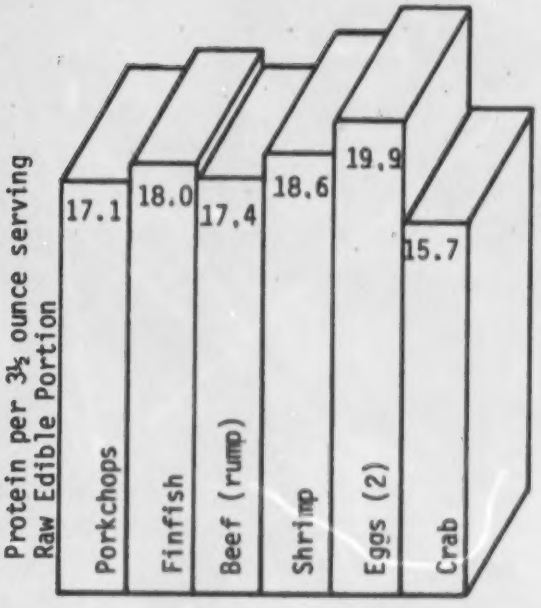
FOODS are organic compounds that serve as energy sources and building blocks for cell structure.	CARBOHYDRATES	Group of chemical compounds made up of sugars and starches; chief source of energy for cell activities.
	PROTEIN	Group of chemical compounds essential for growth and repair of animal tissue; helps build strong muscles; keeps hair shiny and healthy.
	FATS	Group of chemical compounds used in cell membranes and certain regulators; stored source of energy; if eaten regularly, seafood will neutralize effects of saturated fats from other foods in the diet; it will actually reduce the cholesterol level.
NUTRIENTS are necessary for the tissues to manufacture cell regulating substances such as enzymes.	VITAMIN A	Essential for normal cell growth and development; responsible, in deficiency, for hardening and roughness of the skin, nightblindness and degeneration of mucous membranes.
	VITAMIN B-COMPLEX (Thiamin, riboflavin, niacin, B_{12}, pantothenic acid)	Helps to build and repair nerve cells and tissues, also aids in digestion by helping the body use some nutrients for energy.
	VITAMIN D	Required for normal bone growth; necessary for body to use calcium and phosphorus to build strong bones and teeth.
	IODINE	Helps regulate the tyroid gland and prevents goiters (growths on the neck).

TABLE 2.

PROTEIN AND CALORIE CONTENT
OF SELECTED FOODS



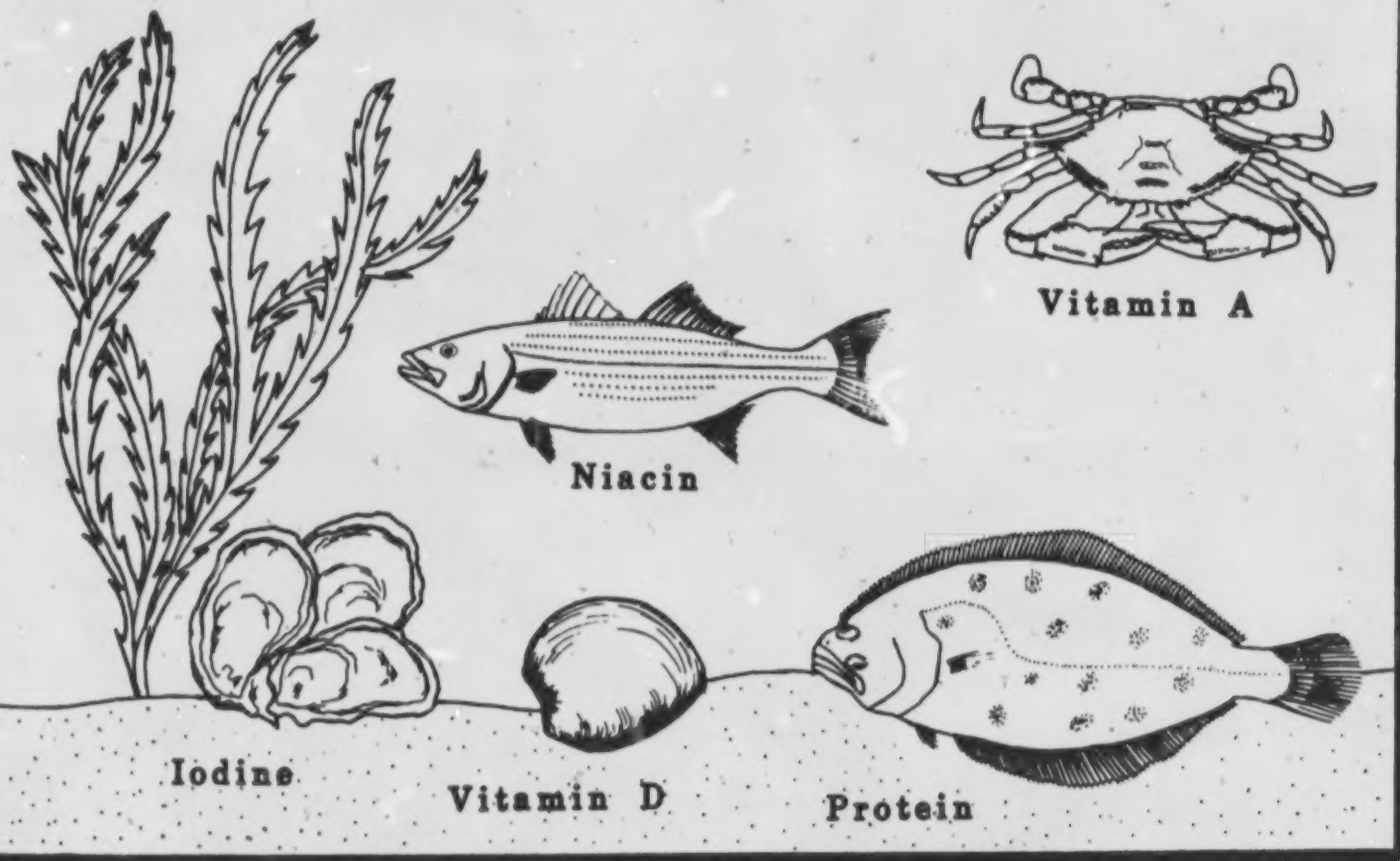
Calorie Comparison



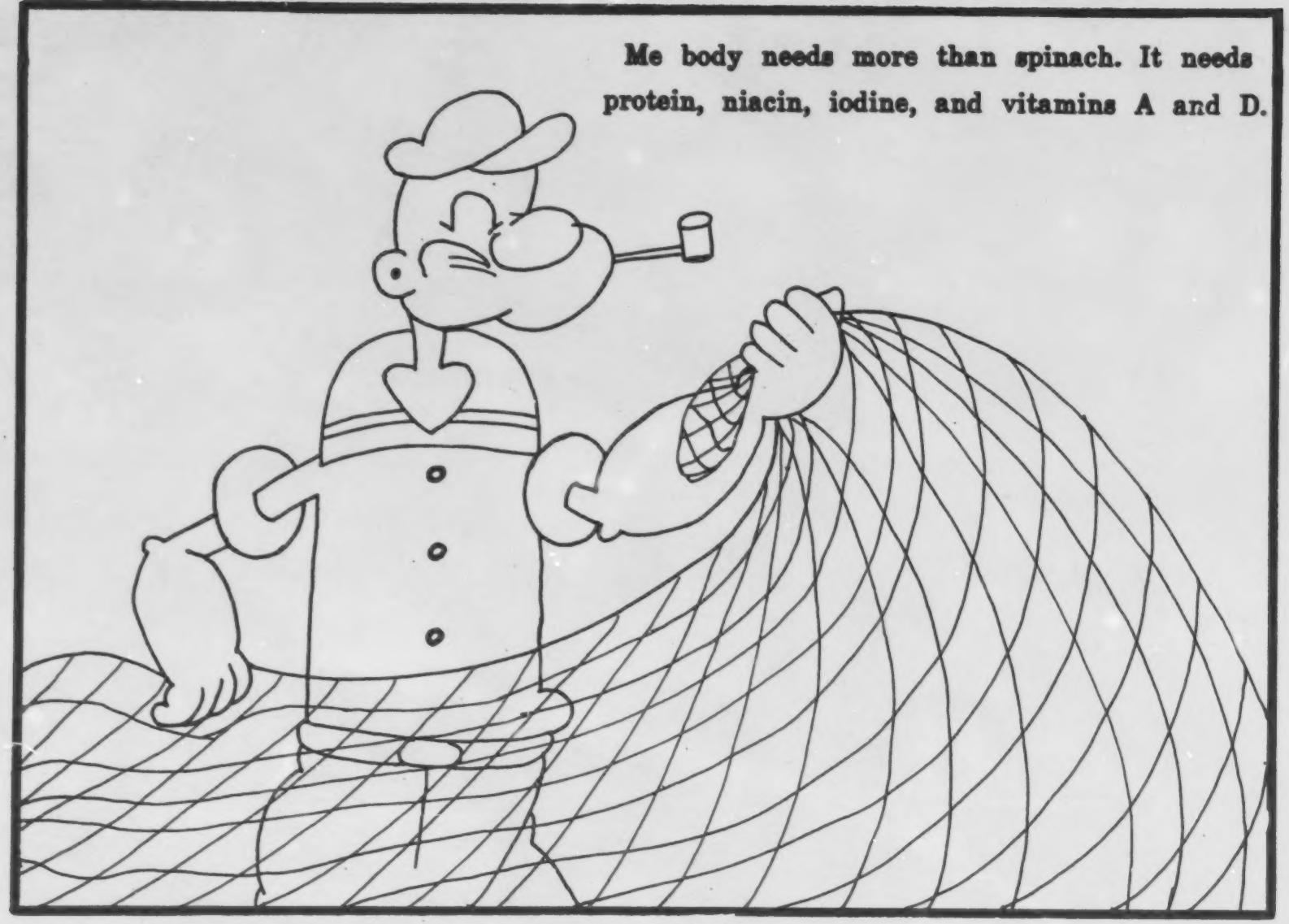
Protein
Comparison

Bulletin Board Idea

FOOD VALUE IN SEAFOOD



Bulletin Board Idea



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Bulletin Board Idea

SAND CITY

DIRECTIONS

1. Each player chooses a marker to move around the board.

2. Choose one player to be the banker. The banker's job is to keep the money and handle business transactions of buying and selling property. The banker gives each player $2,000 as follows:

$500.00 - two	$20.00 - six
100.00 - five	10.00 - seven
50.00 - five	5.00 - ten
1.00 - ten	

   The banker holds the titles to all the properties. When a player buys some property, the player then holds the title.

3. Roll the dice to determine the order of the players. Players begin at GO. Each time a player passes GO, he/she may collect $200.00 from the bank.

4. Roll the dice and move ahead the number of spaces indicated.

5. When a player lands on a piece of Real Estate, he/she may decide to buy the property. To buy the property, the player must calculate 1% of the property value. The player calculates the amount and tells the banker: "I would like to buy _____ for $___.__." The banker then takes the player's money and gives the player the title. The player may collect rent whenever another player lands on his/her property as indicated by the card title.

6. When a player lands on property that is owned by another player, he/she must pay the owner the amount of rent that is indicated on the title card. A player may own a color group of property which increases the rent. For a single piece of a color group, a player may charge the lowest rent. For two pieces of a color group, a player may charge the second rate and etc.

7. When a player lands on the space marked TAXES, he/she must pay a 1% tax on the prices paid for all the properties he/she owns. For example, if a player owns two properties for which he/she paid a total of $1,250 ($750 + $500), then the player will pay 0.01 x $1,250 or $12.50 in taxes. The tax money is put in the center of the board. Any player who lands on FREE PARKING may win the tax money.

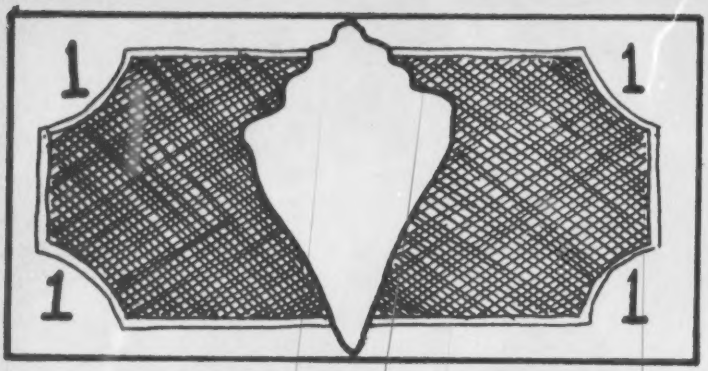
8. There are two spaces marked Commercial Property and two spaces marked Residential Property. When a player lands on any of these four spaces, he/she must draw a card from the proper place on the board according to the space on the board. The player must follow the instructions on the card. All money is paid to the center of the board.

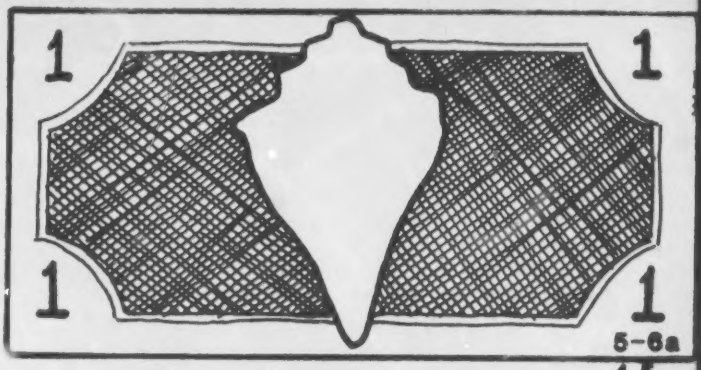
9. The poor house space is for the player who has gone bankrupt and lost everything he/she owned. A bankrupt player returns all his/her property to the bank.

10. A player may sell his/her property to another player or to the bank at any time.

11. The game is over when all the property has been sold and one or more players go bankrupt. At the end of the game each player totals all the property values and money he/she has. The winner is the player with the highest total amount of property value and money.

SAND CITY
Commercial Property
Residential Property
Residential Property
Commercial Property
FREE PARKING
POOR HOUSE
GO
Live Oak Drive $50,000
Dogwood Trail $44,000
Islander Inn $75,000
Ocean Pier $80,000
Youpon Drive $60,000
Pirate's Cove Road $42,000
Blackbeard's Marina $27,000
Raleigh's Motel $20,000
Capt. Frank's Mini Golf $14,000
Traveler's Inn $36,000
Dough's Bakery $25,000
Vinyard Drive $40,000
Fairfare Drive $23,000
Soundside Drive $35,000
Teach's Light Restaurant $50,000
Burrus Five & Dime $44,000
Nor'East Drive $10,000
Hurricaine Strip $8,000
Piper's Shore Road $12,000
Austin's Grocery $24,000
Harbour Crafts $10,000
Raleigh's Tavern $25,000





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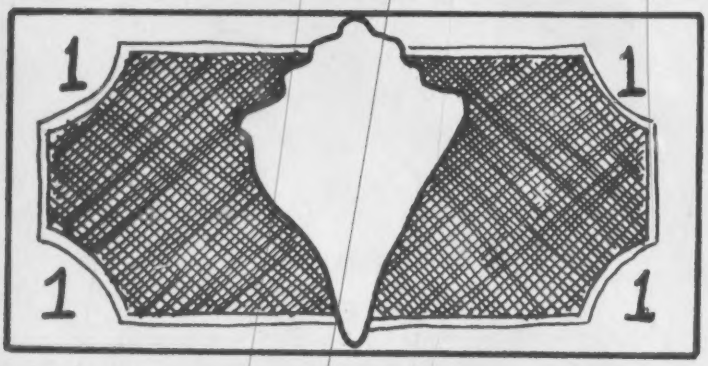

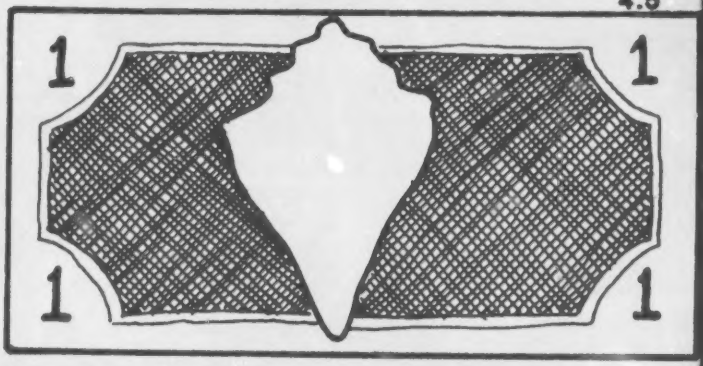

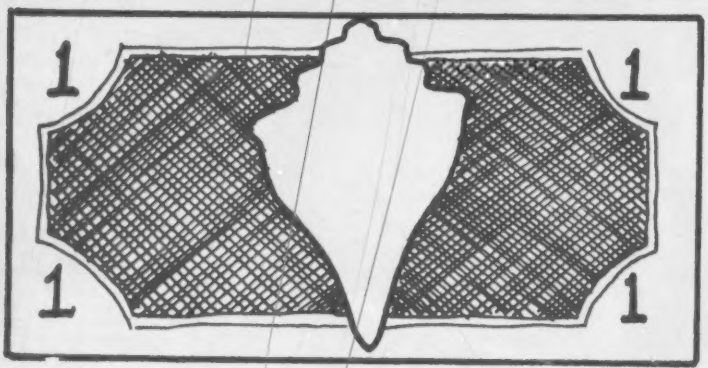

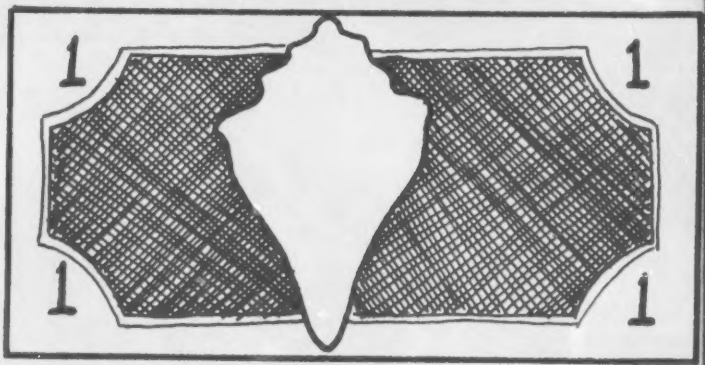

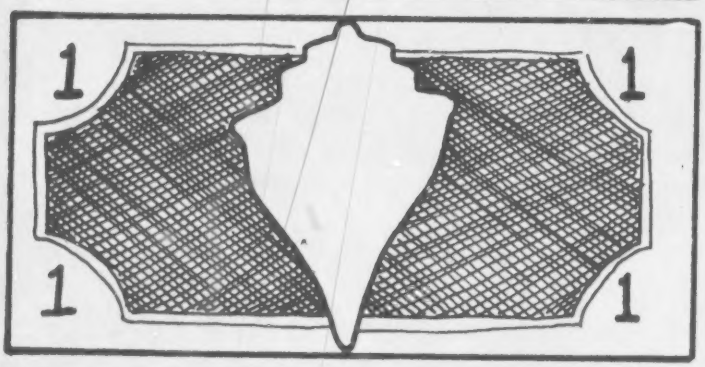

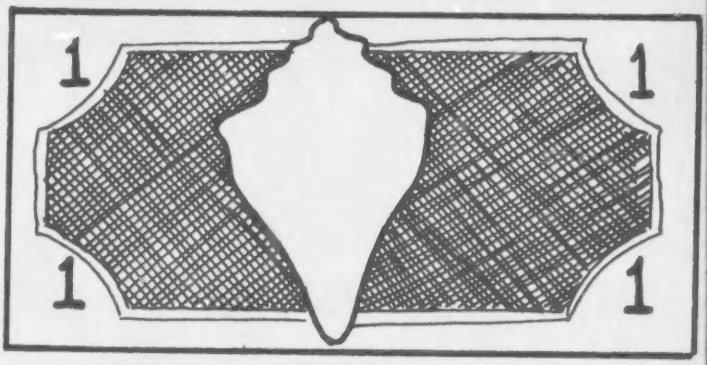

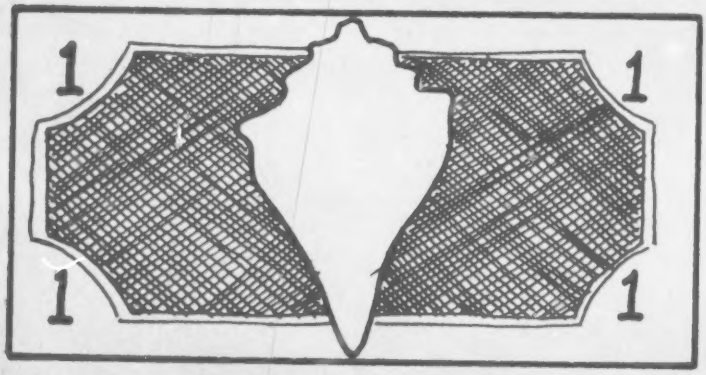

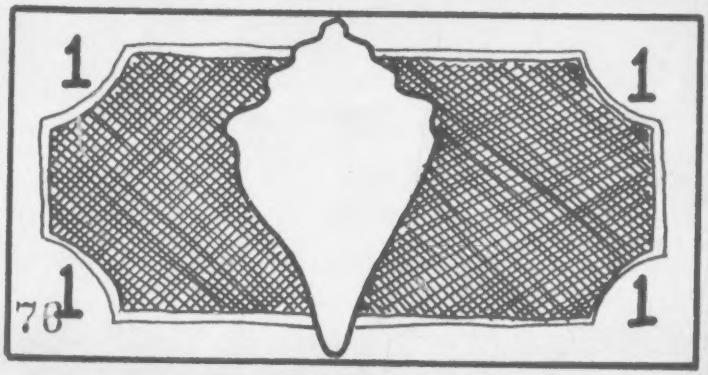

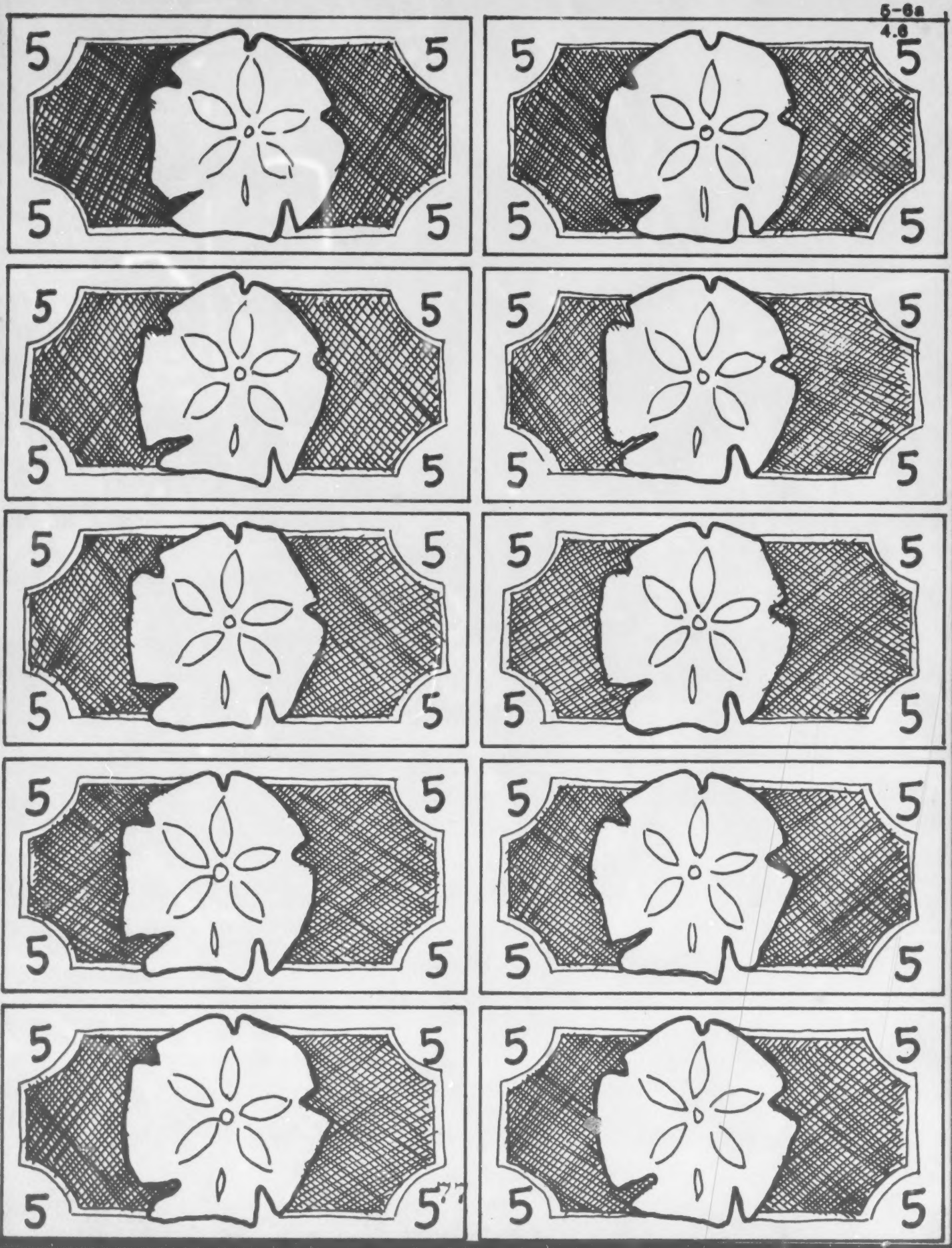
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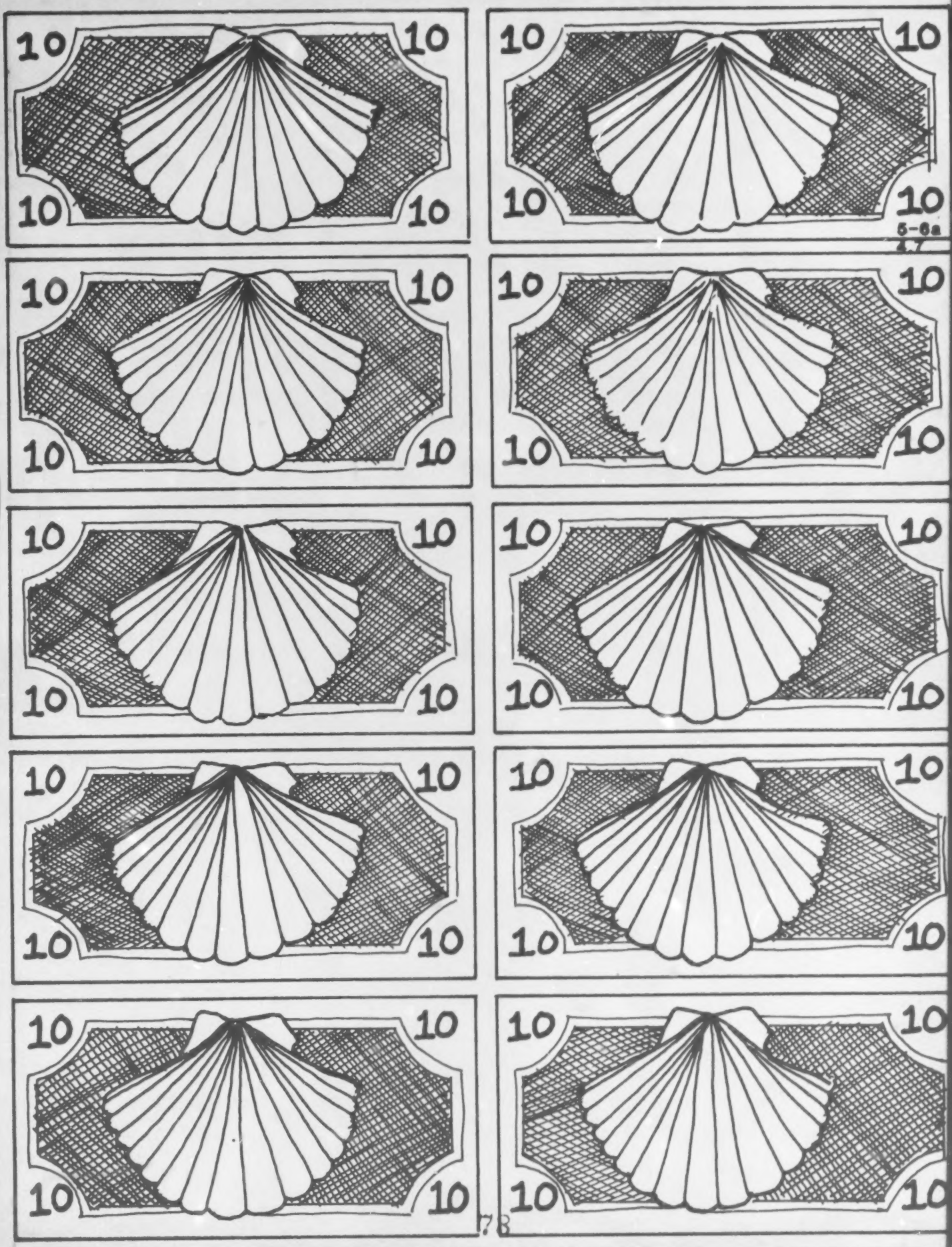
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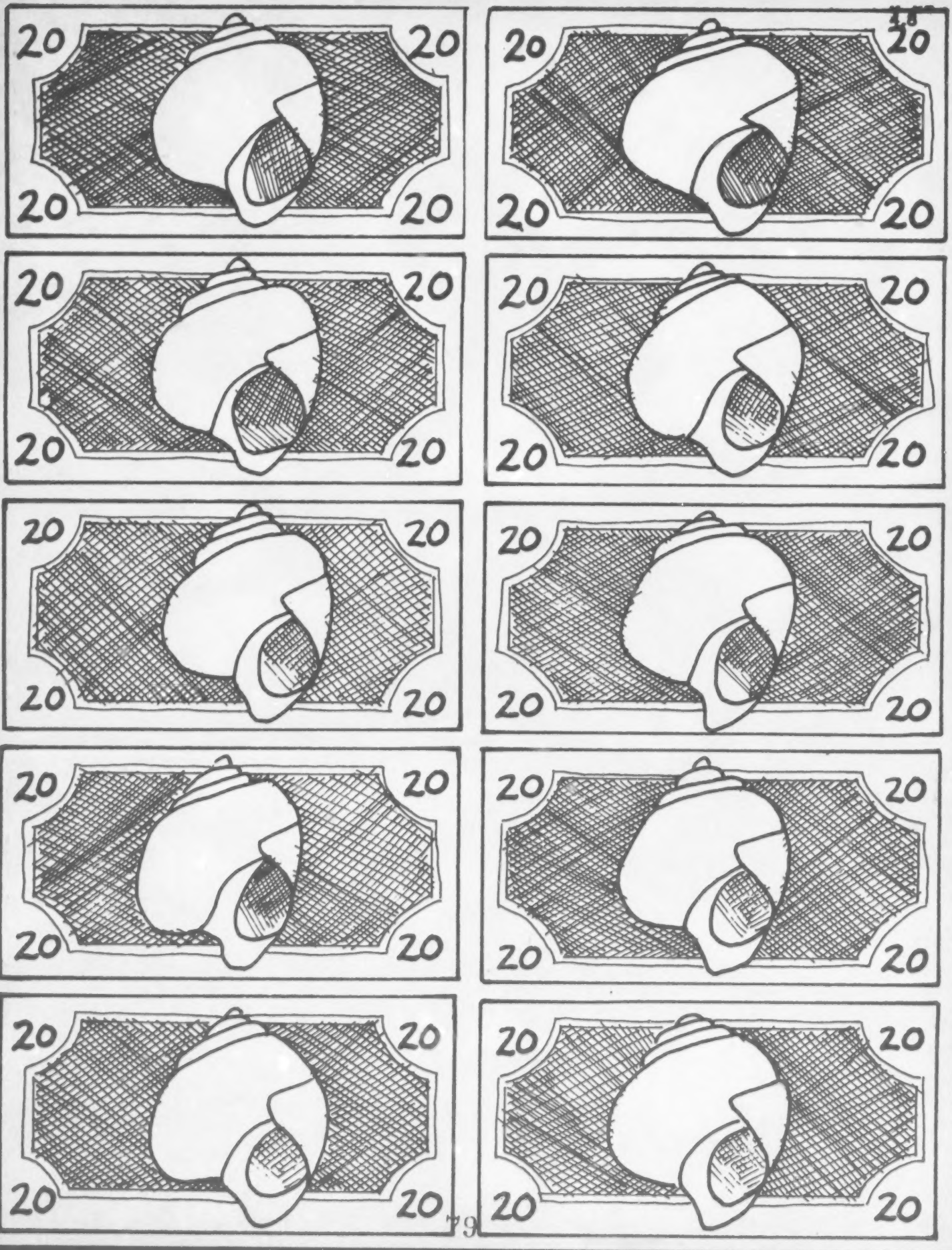
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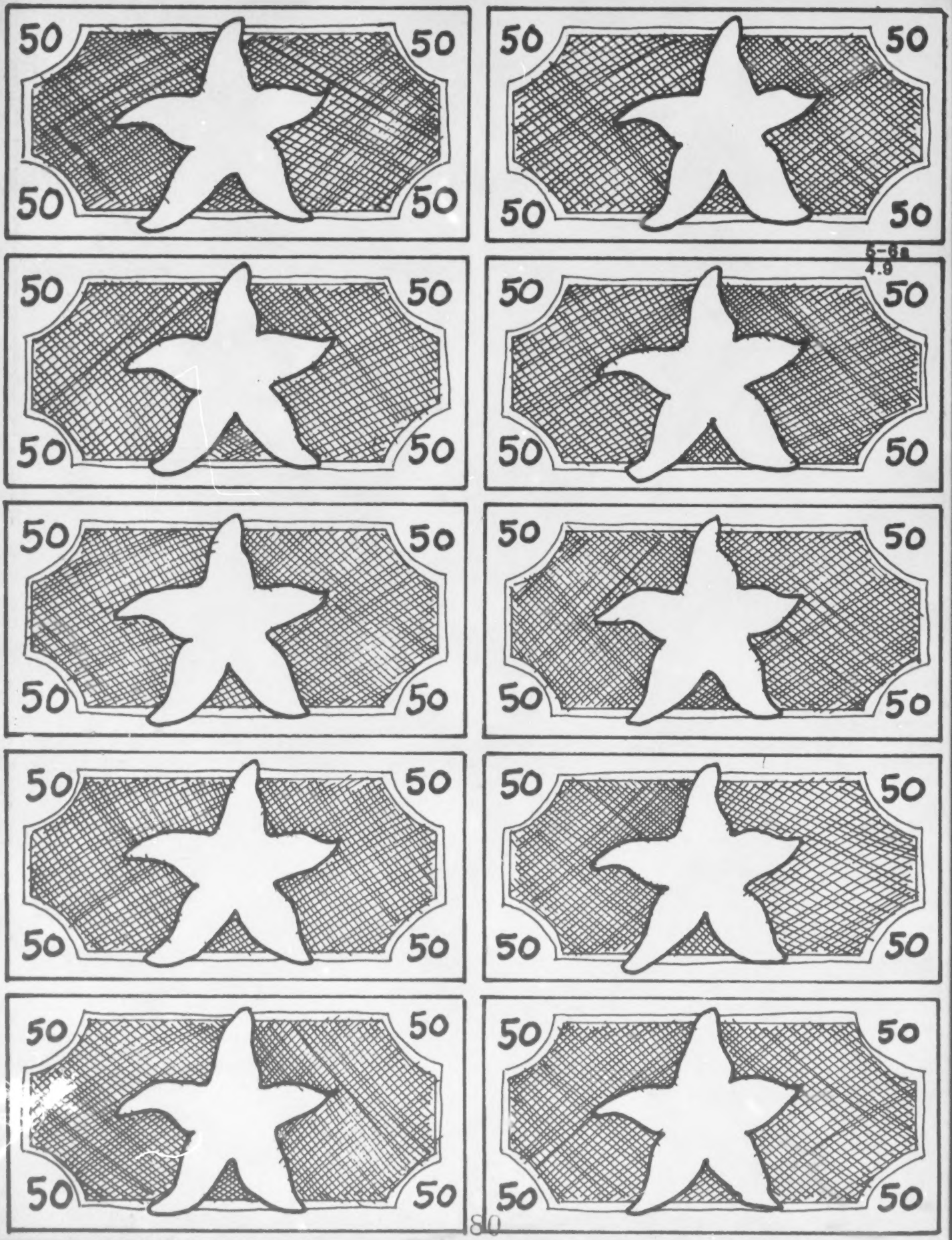

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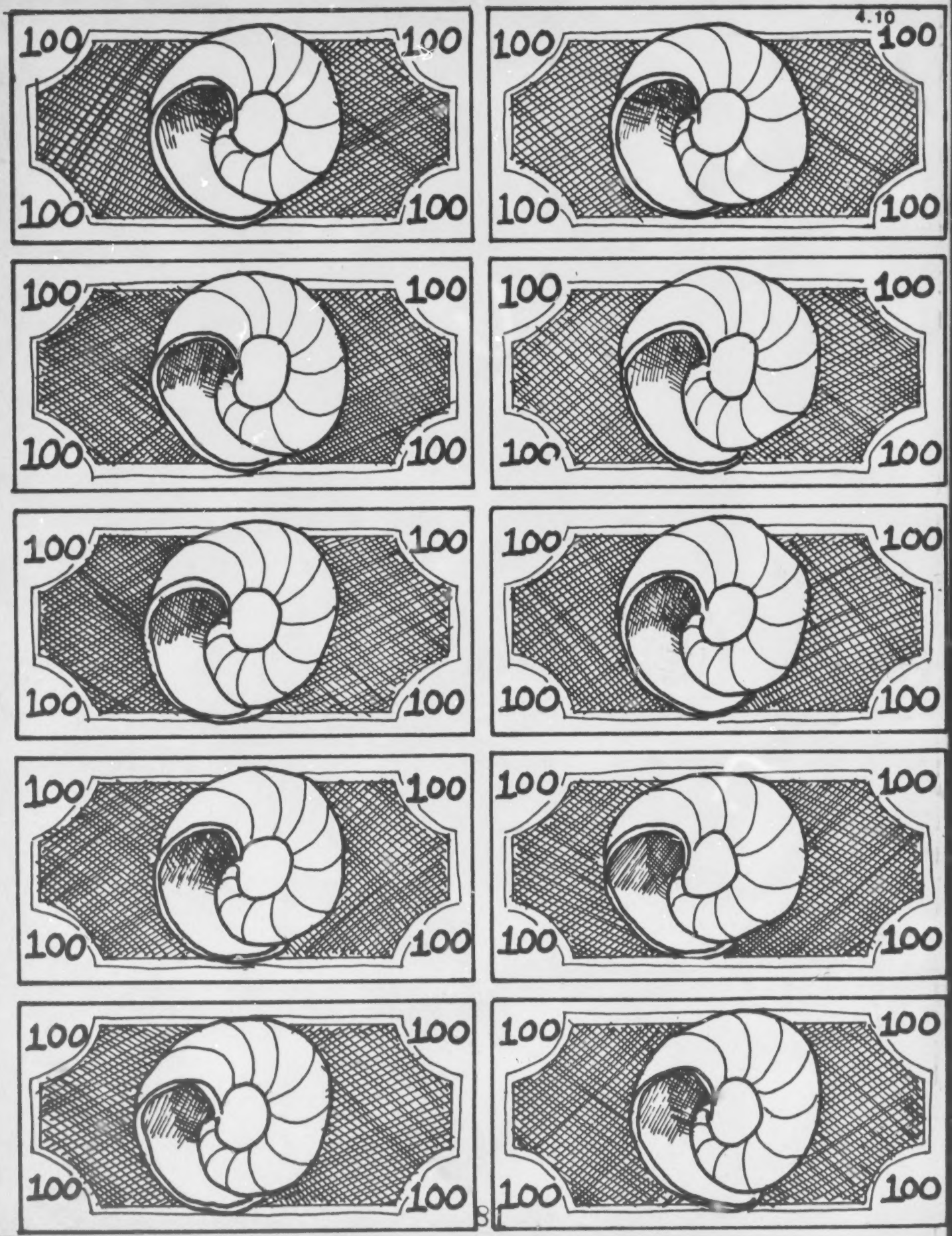
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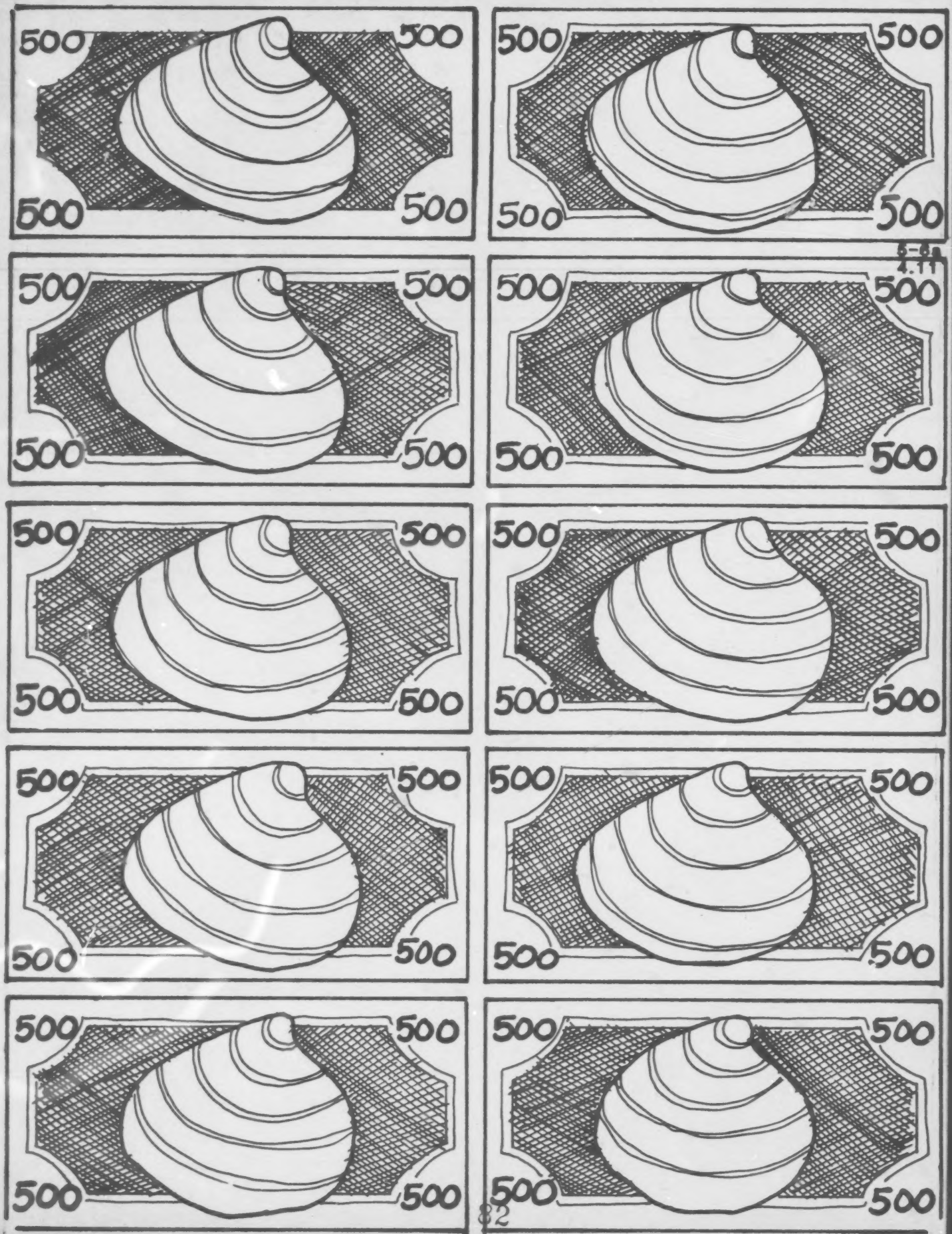
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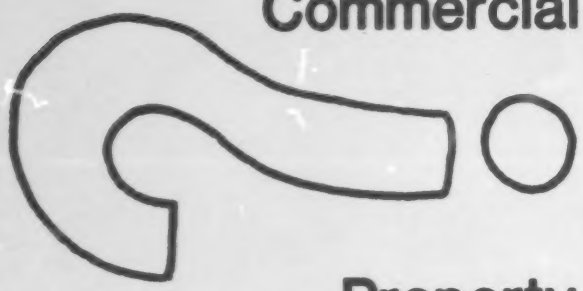
Pirate's Cove Road	Live Oak Drive	Piper's Shore Road
$42,000 x .01 = $420.	$50,000 x .01 = $500.	$12,000 x .01 = $120.
Rent: $21.00	Rent: $25.00	Rent: $ 6.00
2: $42.00	2: $50.00	2: $12.00
3: $63.00	3: $75.00	3: $18.00
		5-6 4.12
Fanfare Drive	**Hurricane Strip**	**Yaupon Drive**
$24,000 x .01 = $240.	$8,000 x .01 = $80.	$60,000 x .01 = $600.
Rent: $12.00	Rent: $ 4.00	Rent: $30.00
2: $24.00	2: $ 8.00	2: $60.00
3: $36.00	3: $12.00	3: $90.00
Nor'east Drive	**Vineyard Drive**	**Dogwood Trail**
$10,000 x .01 = $100.	$40,000 x .01 = $400.	$54,000 x .01 = $540.
Rent: $ 5.00	Rent: $20.00	Rent: $27.00
2: $10.00	2: $40.00	2: $54.00
3: $15.00	3: $60.00	3: $81.00
	Soundside Drive	
	$35,000 x .01 = $350.	
	Rent: $17.00	
	2: $34.00	
	3: $51.00	

Burrus Five & Dime	Raleigh's Tavern	Ocean Pier
$44,000 x .01 = $440.	$25,000 x .01 = $250.	$80,000 x .01 = $800.
Rent: $22.00	Rent: $12.00	Rent: $40.00
2: $44.00	2: $24.00	2: $80.00
3: $66.00	3: $36.00	3: $120.00
		5-6a 4.13
Blackbeard's Marina	**Austin's Grocery**	**Traveler's Inn**
$27,000 x .01 = $270.	$24,000 x .01 = $240.	$35,000 x .01 = $350.
Rent: $13.00	Rent: $12.00	Rent: $17.00
2: $26.00	2: $24.00	2: $34.00
3: $39.00	3: $36.00	3: $42.00
Harbour Crafts	**Raleigh's Motel**	**Capt'n Frank's Mini-Golf**
$10,000 x .01 = $100.	$20,000 x .01 = $200.	$14,000 x .01 = $140.
Rent: $ 5.00	Rent: $ 5.00	Rent: $ 7.00
2: $10.00	2: $10.00	2: $14.00
3: $15.00	3: $15.00	3: $21.00
Teach's Light Restaurant	**Islander Inn**	**Dough's Bakery**
$50,000 x .01 = $500.	$75,000 x .01 = $750.	$25,000 x .01 = $250.
Rent: $25.00	Rent: $35.00	Rent: $12.00
2: $50.00	2: $70.00	2: $24.00
3: $75.00	3: $105.00	3: $36.00

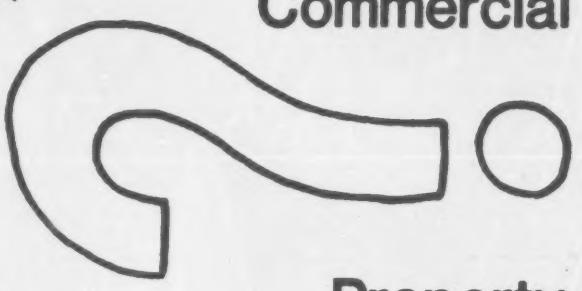
5-8a
4.14

Commercial



Property

Commercial



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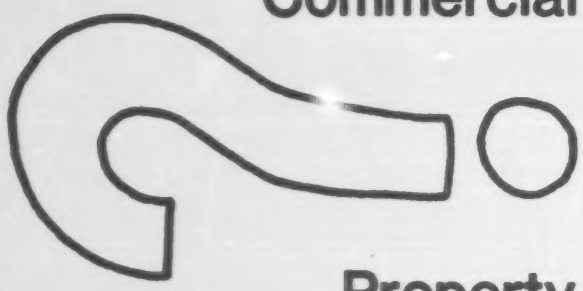

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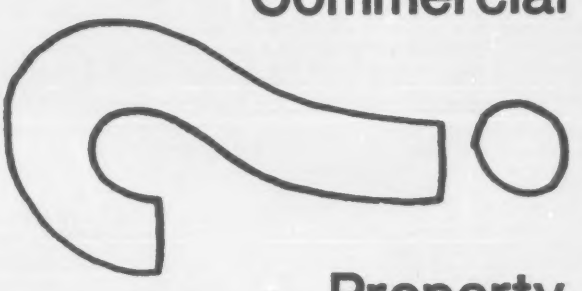

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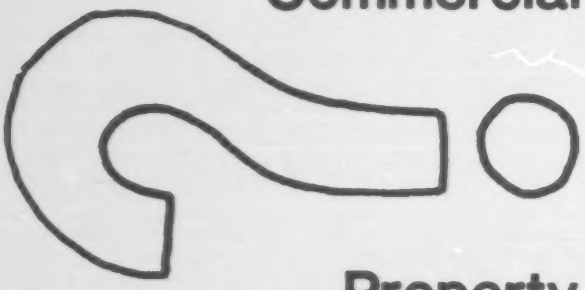

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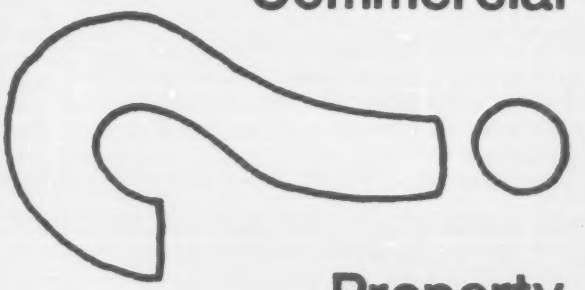

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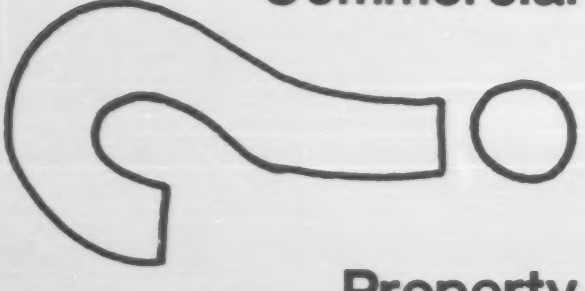

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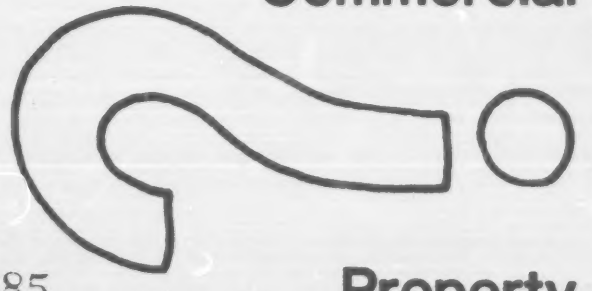


Property

ADVANCE TO GO.

INTEREST RATE GOES UP, YOU MAY NOT PURCHASE THE NEXT PIECE OF PROPERTY YOU LAND ON.

FLOOD INSURANCE DOES NOT COVER DAMAGE BY RECENT HURRICANE. PAY REPAIR BILL OF $300.00.

BUSINESS WINDOWS ARE DAMAGED BY STORM WINDS, PAY $200.00 FOR REPAIRS.

STORM DAMAGE TO YOUR BUSINESS.

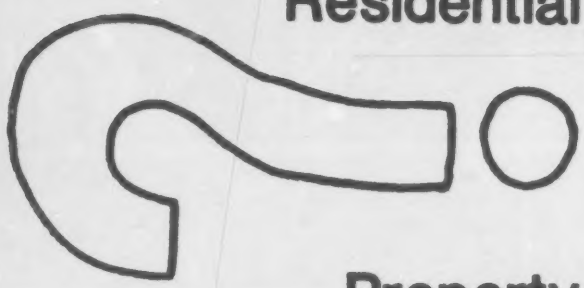
PAY $400.00 FOR REPAIRS.

ADVANCE TO HURRICANE STRIP. IF YOU PASS GO COLLECT $200.00. IF OWNED, PAY OWNER DOUBLE AMOUNT THE CARD REQUIRES.

BUSINESS IS ROBBED WHILE YOU WERE FISHING. PAY INSURANCE $500.00.

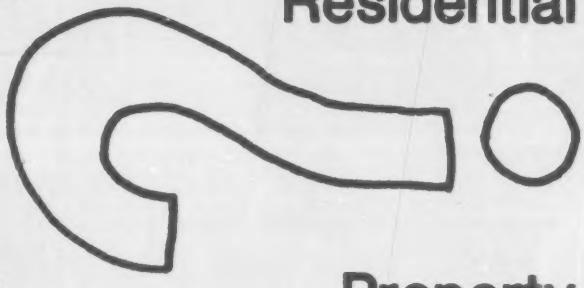
5-6a
4.16

Residential



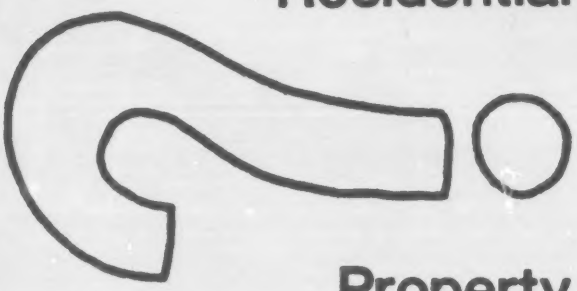
Property

Residential



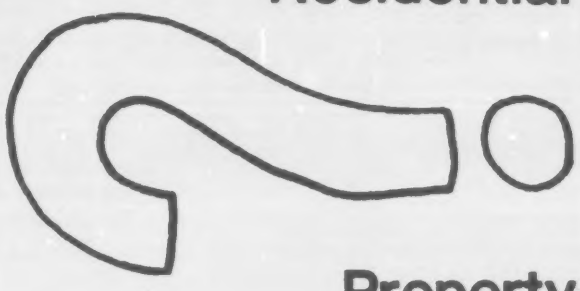
Property

Residential



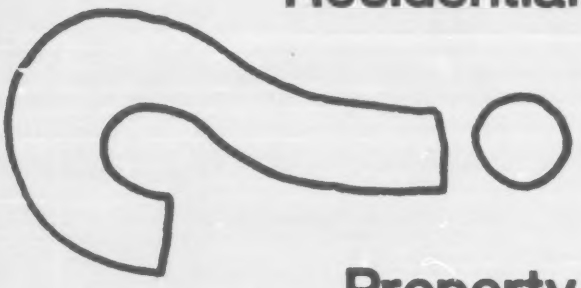
Property

Residential



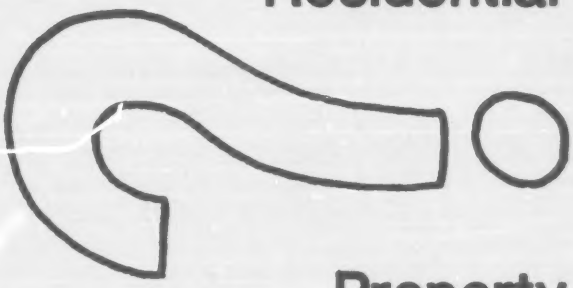
Property

Residential



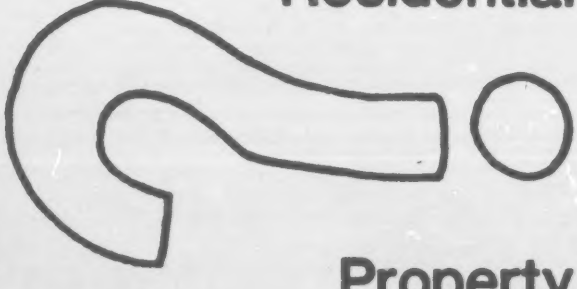
Property

Residential



Property

Residential



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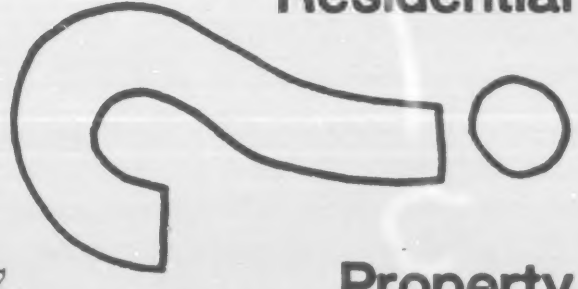
Residential



Property

BANK ERROR IN YOUR FAVOR.

COLLECT $200.00

YOU ARE ASSESSED FOR STREET REPAIRS. PAY $20.00 TO EACH PLAYER.

PAY $50.00 FOR RIDING ON BEACH WITHOUT A PERMIT.

PAY FOR HOUSE REPAIRS $100.00

INSURANCE COMPANY WILL NO LONGER INSURE YOUR HOME BECAUSE OF EROSION.

PAY $200.00.

TAX INCREASE PAY $200.00.

HIGH TIDE ERODES TO THE SUPPORT PILINGS OF YOUR HOUSE. PAY $500.00 FOR FILL.

JOURNEY'S INN

CHARACTERS

Harriet Holiday - mother
Henry Holiday - father
Humphrey Holiday - son
Harry Holiday - older son
Henrietta Holiday - daughter
1st customer - young man

Setting: (8:30 p.m.) The Holidays are sitting in the office discussing the situation.

Harriet - This is just awful; we have 92 rooms, it's July 4th weekend and we're booked. Henry, Henry, are you listening, Henry?

Henry - Humph? What did you say dear?

Harriet - What will we do? You know we need to get serious. What if. . . if. . . someone needs a place to stay? I never have been able to say no to anyone before.

Henry - Honey, you need to learn that you can't give everyone a room for the night.

Humphrey - Mom, there are about 80 motels on this beach. Sometimes you act like Mother Hubbard.

Harriet - I'll try to be stern. There are just no rooms to rent and that's that.

Henrietta- Mother there is someone coming. A car just drove up.

Harriet - O.K. I'll be firm. NO VACANCIES!!

(The 1st customer enters the office.)

Customer - Hello, excuse me. My wife and I have been driving for hours. I saw your no vacancy sign but I thought maybe you might have a heart, I mean a room.

Harry - I'm sorry, but we have been booked solid since Memorial Day. I'm sorry we can't help you.

Henry - Yes, we really need to add on to this place. There just aren't enough rooms on this beach to take care of all the tourists.

Humphery - Have you tried the Sea Ranch?

Customer - Yes, we've tried five places, but no luck! We had reservations in a motel about two hours north of here but I got so tired with all of the driving. I figured we better stop early. We're on our honeymoon and we've already had two flat tires today. My wife was counting on this trip so much and I don't want to disappoint her.

Henrietta- That's awful!! I have a sleeping bag. You could sleep on the beach.

Harry - Now, if it were winter, we'd have plenty of vacancies. But not this weekend. It's a holiday you know.

Customer - Yes - I understand. I guess we'll have to keep on riding. Thanks anyway.
(Customer turns to leave.)

Harriet - Wait a minute! I can't, I just can't let you go. You can stay here. We have a small guest room in our house. It's not much but it is a place to sleep.

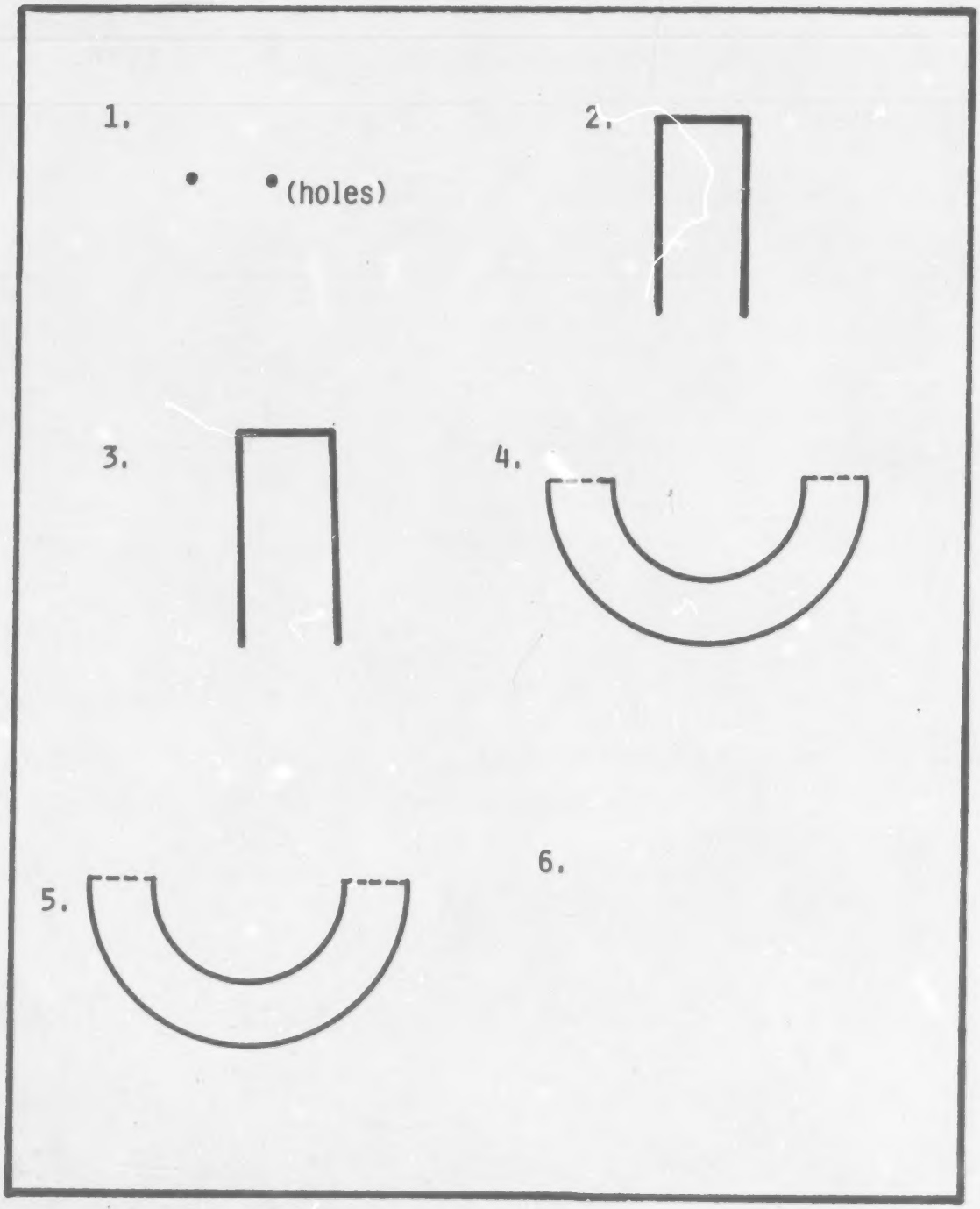
Henry - It won't be cheap.

Customer - Oh, thank you so much!!! You're very kind. I'll get our things.
(He leaves.)

Humphrey - Yep Mom, a real Mother Hubbard.

Henry - Humph! Women!

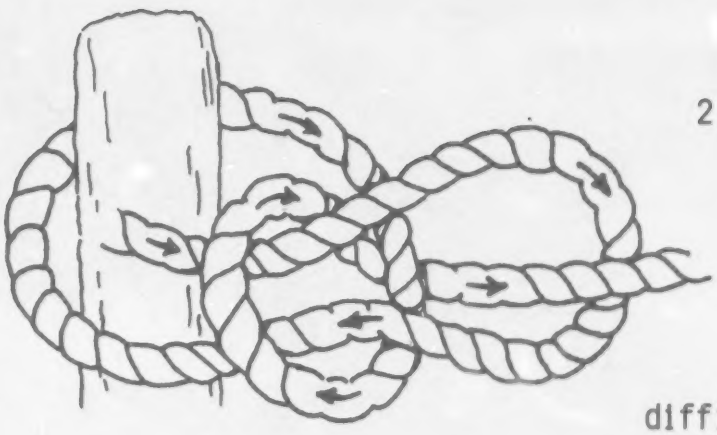
KNOT DEMONSTRATION BOARD



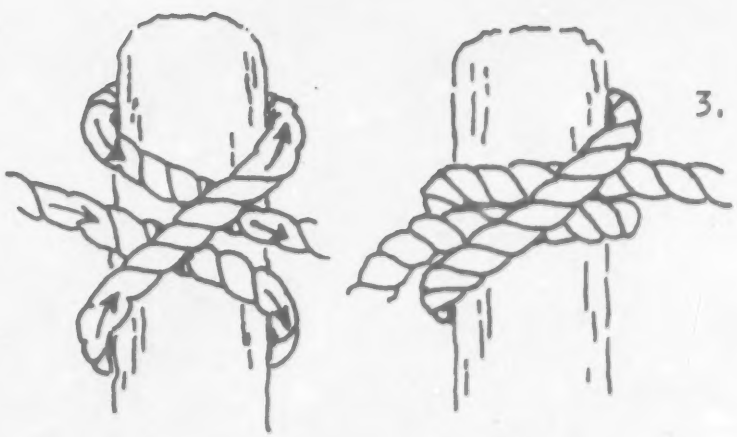
NOTE: Cut along solid line.
Fold along segmented lines.

DIRECTIONS FOR TYING KNOTS

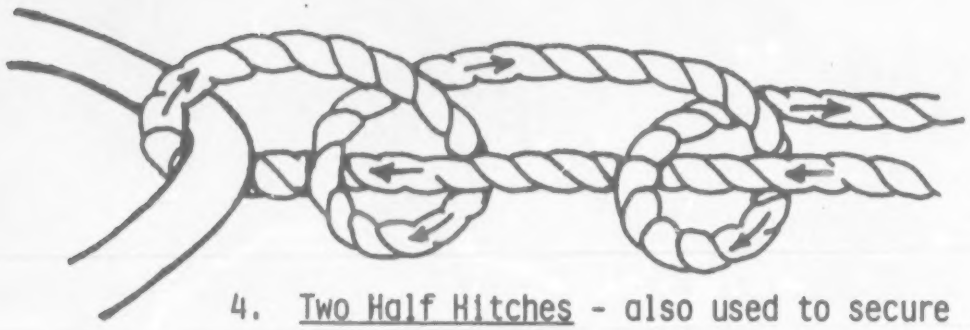
1. Square or Reef Knot - most common and useful knot and is referred to as the sailor's knot. It can be difficult to untie and should never be used to join together different sizes of rope.



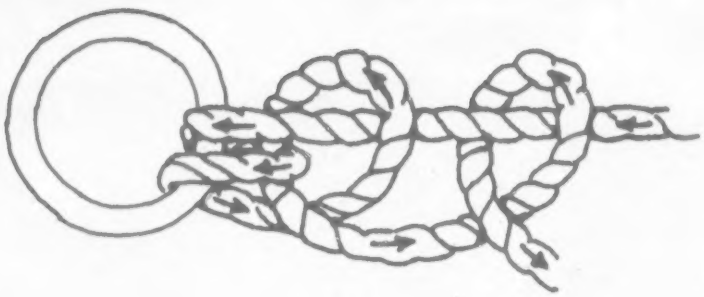
2. Bowline and Running Bowline - These knots are used whenever a loop or noose is needed on the end of a rope. An example would be making a boat fast to a pier or wharf. A bowline will not slip nor is it difficult to untie. By running the loose end of the rope through the loop, a running bowline is made.



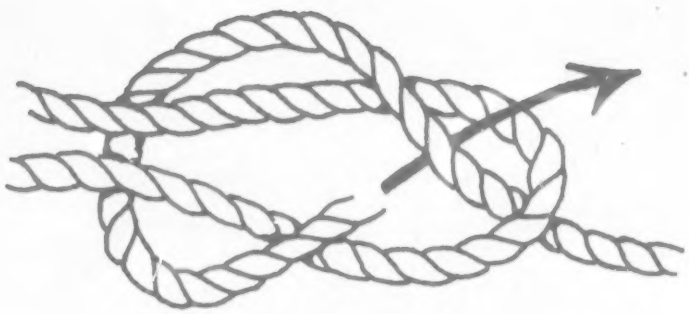
3. Clove hitch - This knot is only a temporary but efficient way of making a rope fast to a piling or bollard.

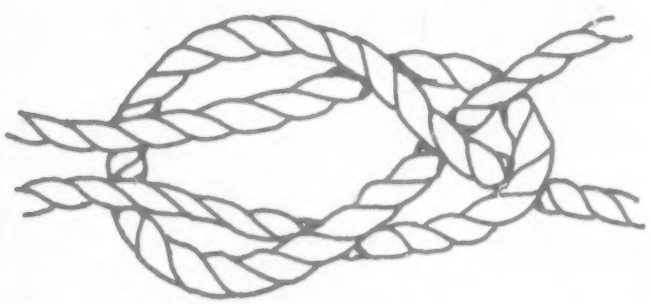


4. Two Half Hitches - also used to secure a rope to a bollard, piling, timber or stanchion.

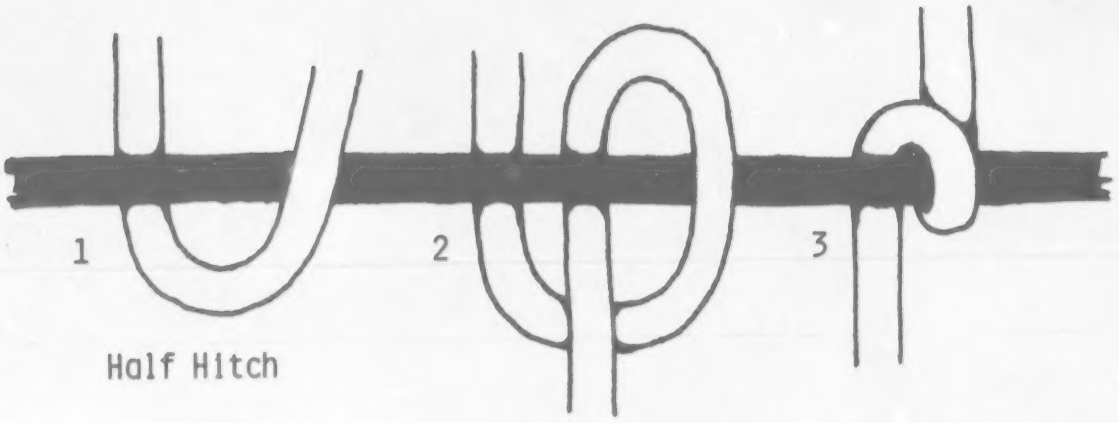


5. Fisherman's Bend or Anchor's Bend - a knot used to make fast to a buoy or spar or the ring of an anchor.

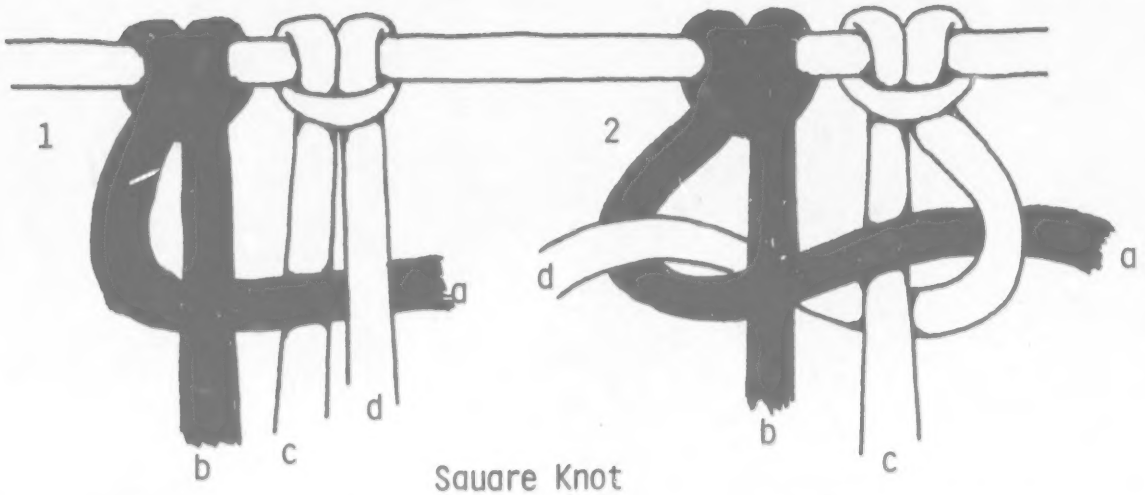




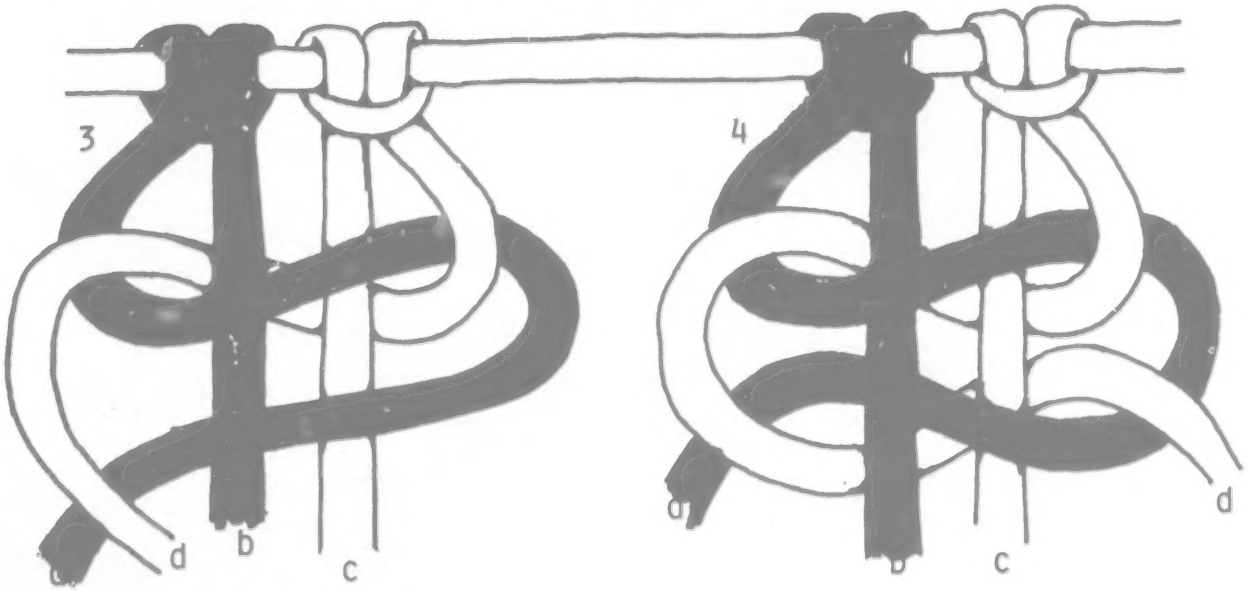
6. Sheet or Becket Bend - used to join two ropes together and will not slip even if there is a difference in diameter of the ropes being joined.



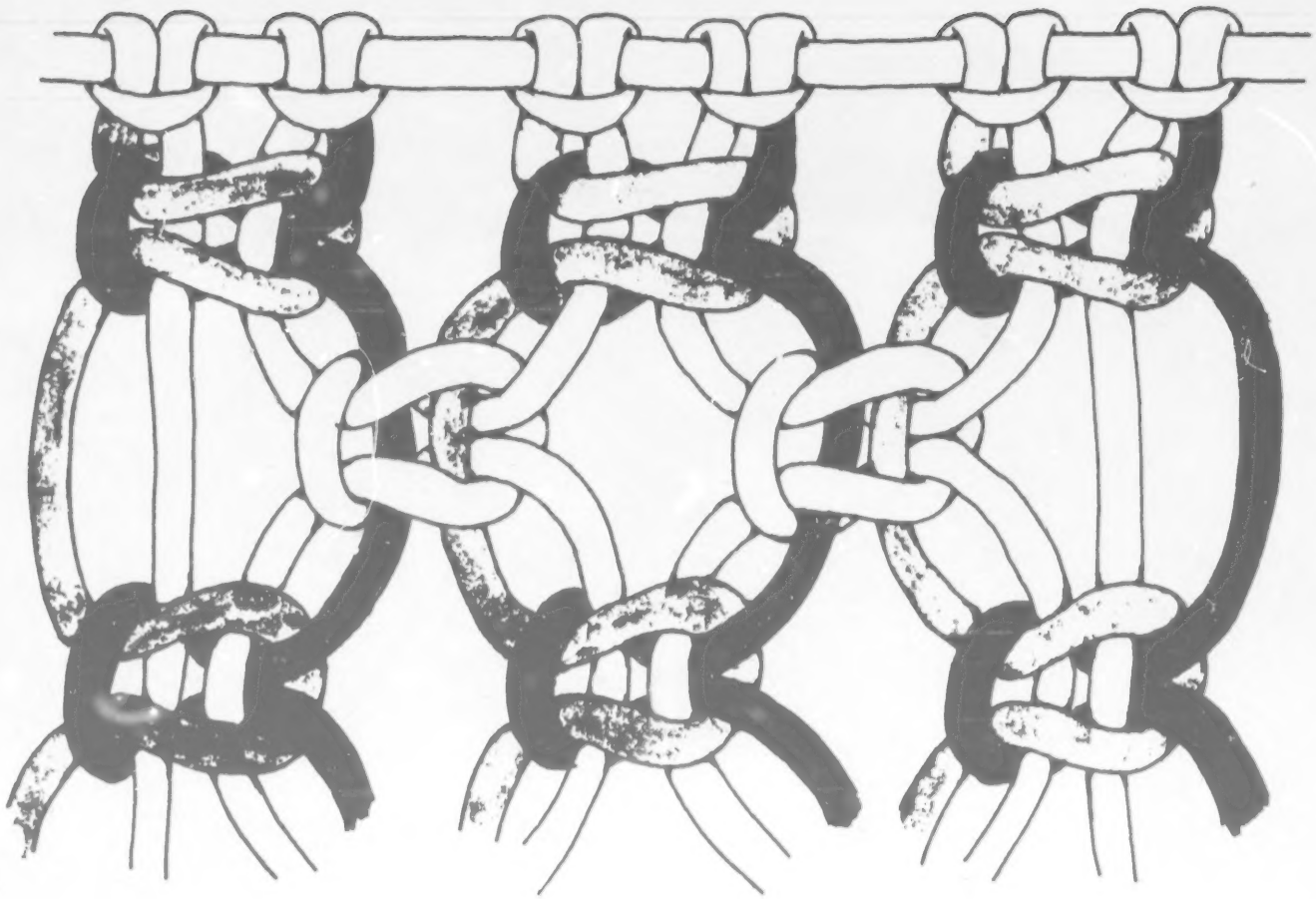
Half Hitch



Sauare Knot



ALTERNATING SQUARE KNOT



DECOY CARVING

1. Carve one bar of soap to the shape in Figure 1. (Top view)

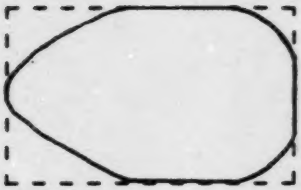


Figure 1.

2. Facing the decoy's body from the front, the body should be carved to look like Figure 2. (Front view)

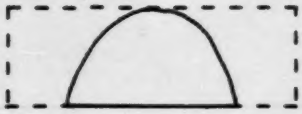


Figure 2.

3. From the side of the decoy's body, the shape shown in Figure 3 should be carved. (Side view)

Figure 3.

4. Using another bar of soap, carve a head and neck. See Figure 4.

Figure 4.

5. Attach the head to the body of the decoy by wetting the bottom surface of the head (neck) and holding it in place against the body until the soap dries and the two parts are fused together. From the side, the decoy should resemble Figure 5.

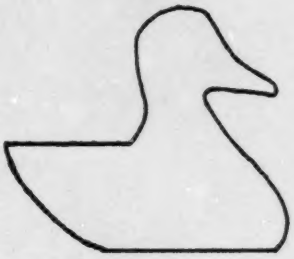


Figure 5.

6. Paint the decoy with tempera paints to resemble a particular duck.

FLAT BOTTOM SKIFF

Assembly Instructions

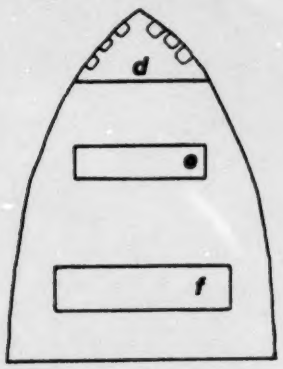
1. Cut out all boat parts along solid lines. Trace or reproduce the forms onto the appropriate materials: (C) = construction paper, (P) = poster board.

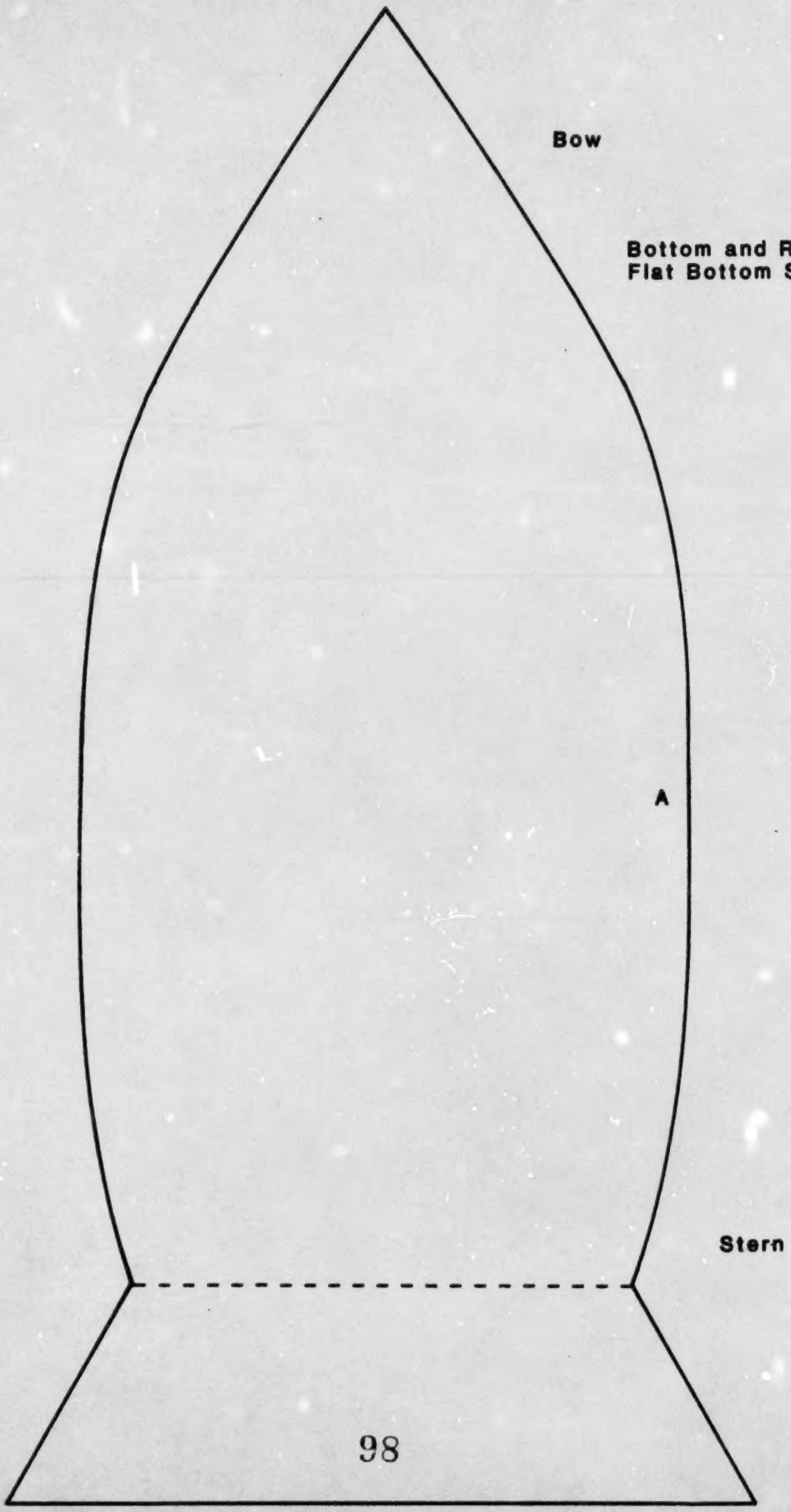
2. Tape the sides "B" and "C" to the edge of part "A". Make sure the sides meet at the bow. Tape the sides together to form the bow.

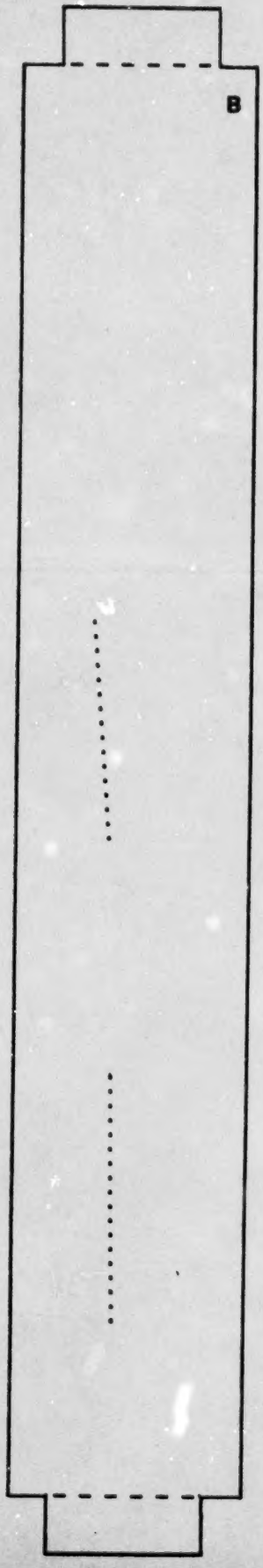
3. Fold up along the dashed line on part "A" to meet the sides attached in step 2. Tape these connections.

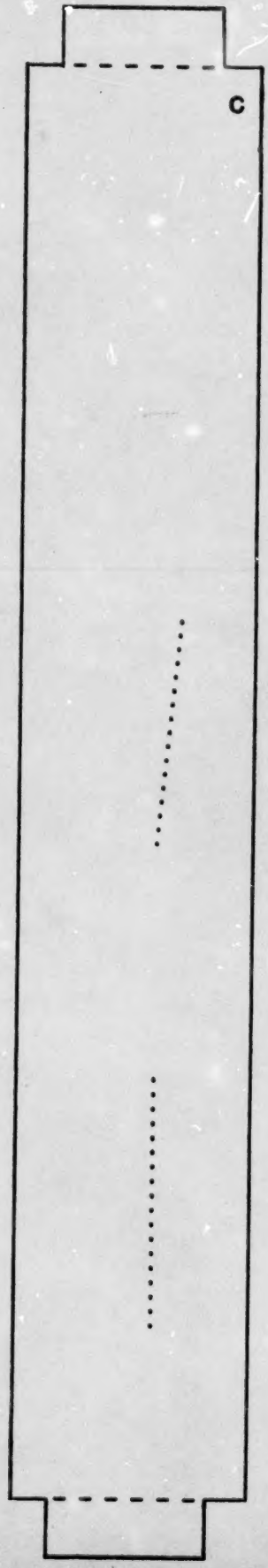
4. Tape part "D" to the top of the bow section.

5. Fold up the tabs along the dashed lines to parts "E" and "F". Tape parts "E" and "F" to the dotted lines in the "ABC" assembly to form the seats. The top of the skiff should look like the figure below.

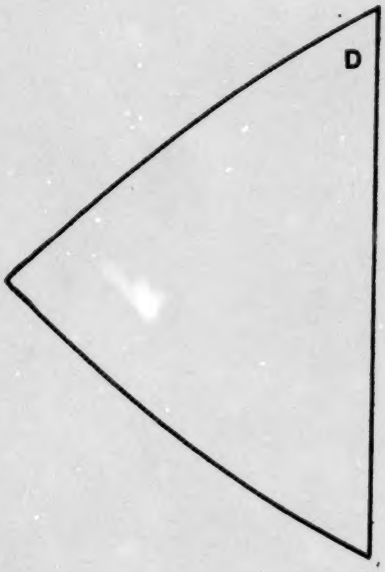



Bow
Bottom and Rear of
Flat Bottom Skiff (C)
A
Stern





Sides and Top Bow Portion for Flat Bottom Skiff (C)



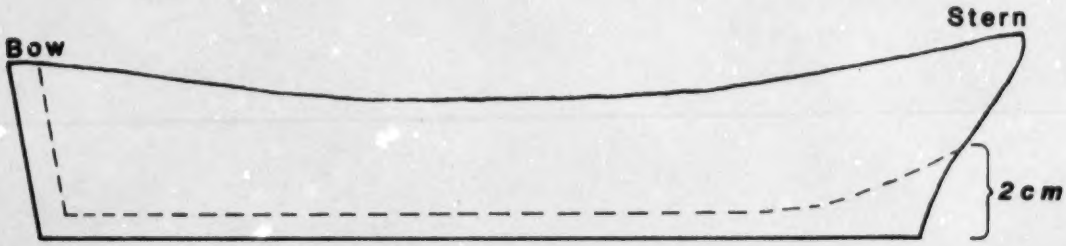
Front and Rear Seats for Flat Bottom Skiff (P)

SHAD BOAT

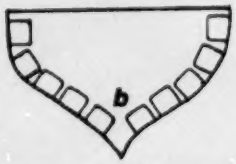
Assembly Instructions

1. Cut out all boat parts along solid lines. Trace or reproduce forms onto appropriate materials: (C) = construction paper, (P) = poster board.

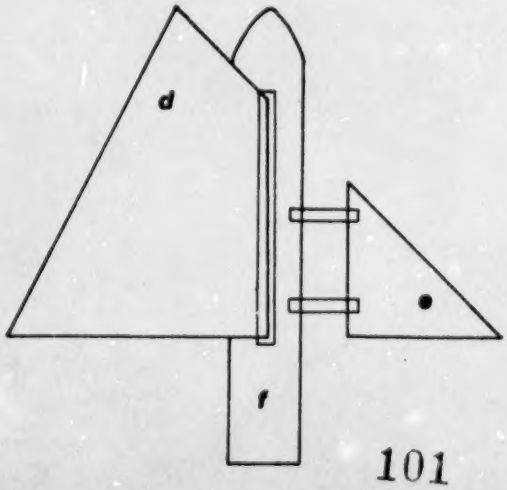
2. Fold "A" along the dashed line. This makes the hull or main body of the ship. Staple the hull as shown in the figure below. Slashed lines indicate where the hull should be stapled.



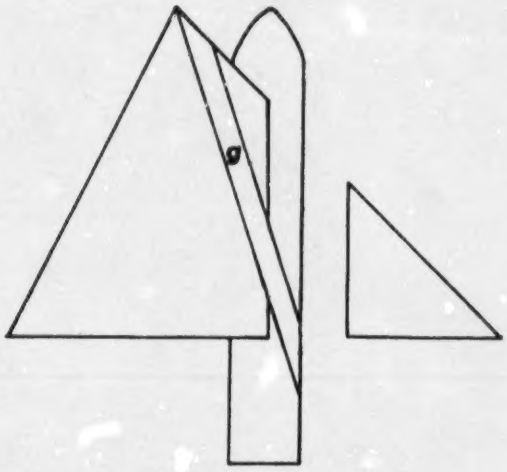
3. Tape part "B" into stern of boat. See the figure below.



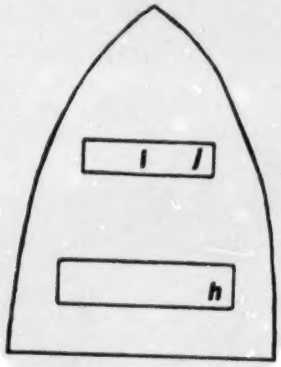
4. Tape parts "D" and "E" to part "F". See the figure below.



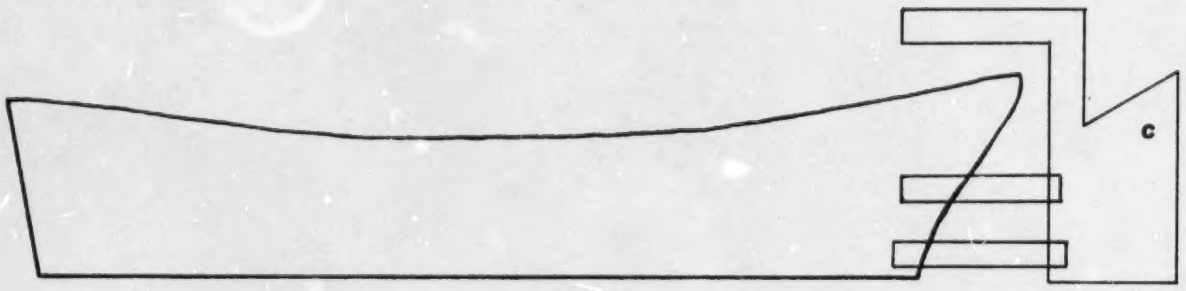
5. Tape part "G" to the sail mast assembly (Step 4) according to the diagram below.



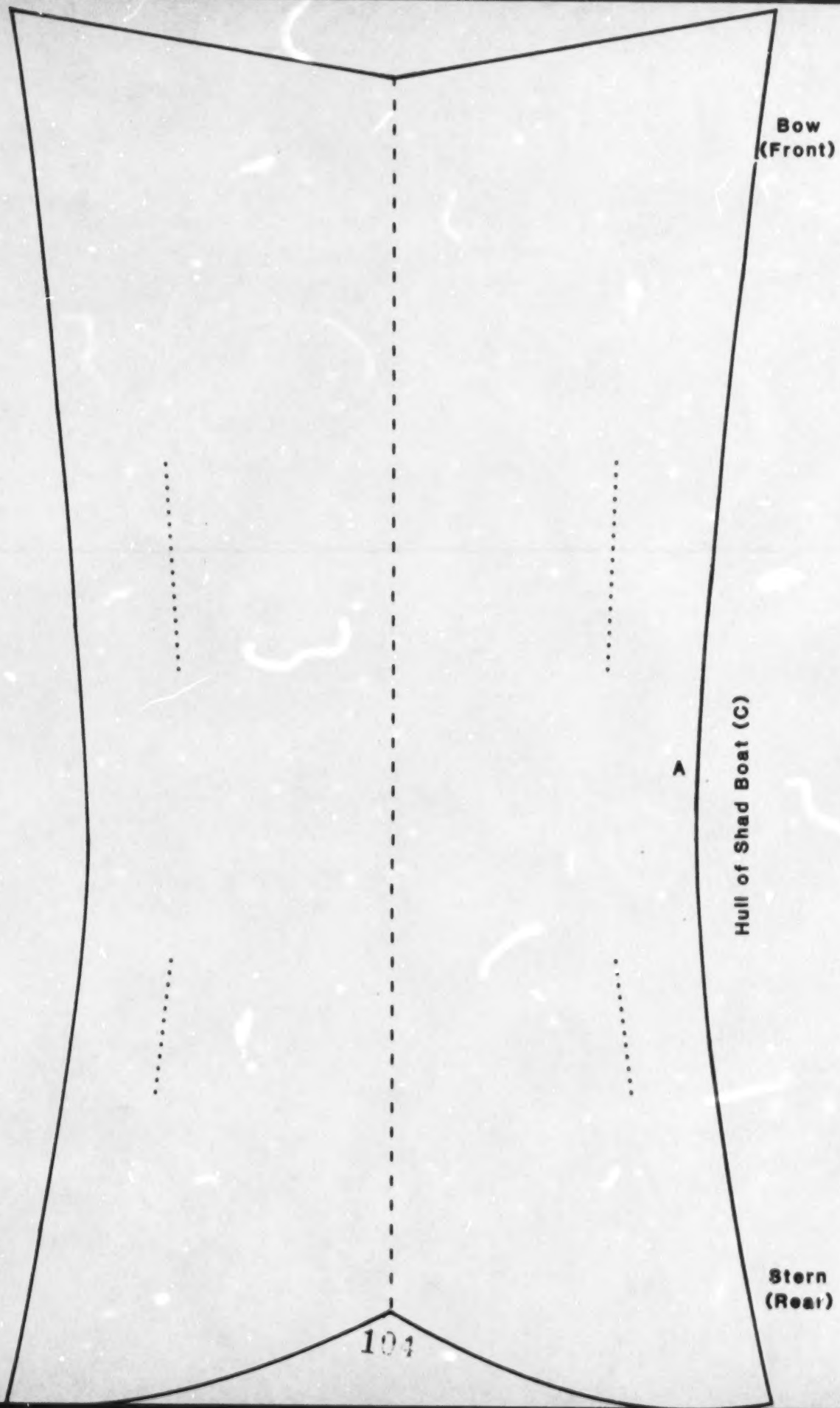
6. Tape parts "H" and "J" to the dotted lines in the hull assembly (Steps 2 and 3). The top of the shad boat should look like the figure below.

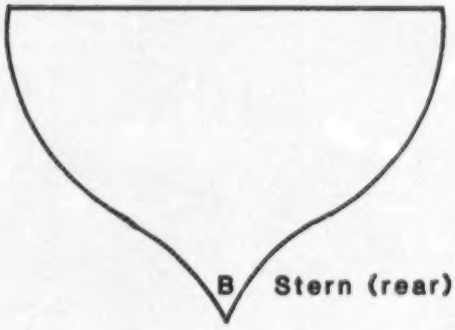


7. Tape part "C" to rear of boat as shown in the figure below.

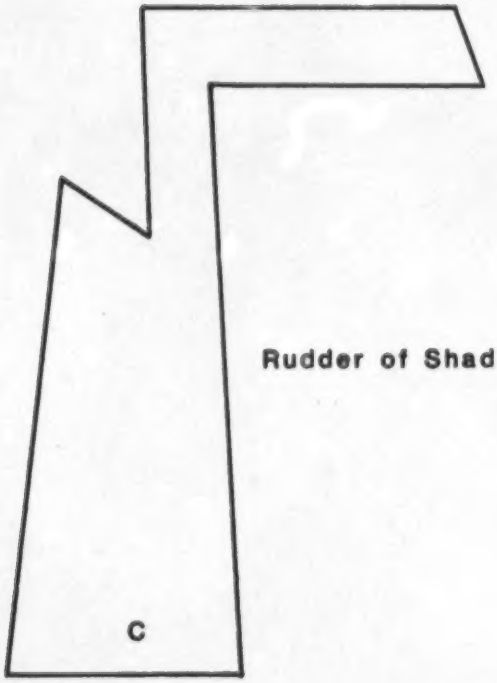


8. Insert the mast assembly through the slot in "J" until the mast touches the bottom of the boat. Tape into position.


5-6a
12.8
Bow
(Front)
A
Hull of Shad Boat (C)
Stern
(Rear)

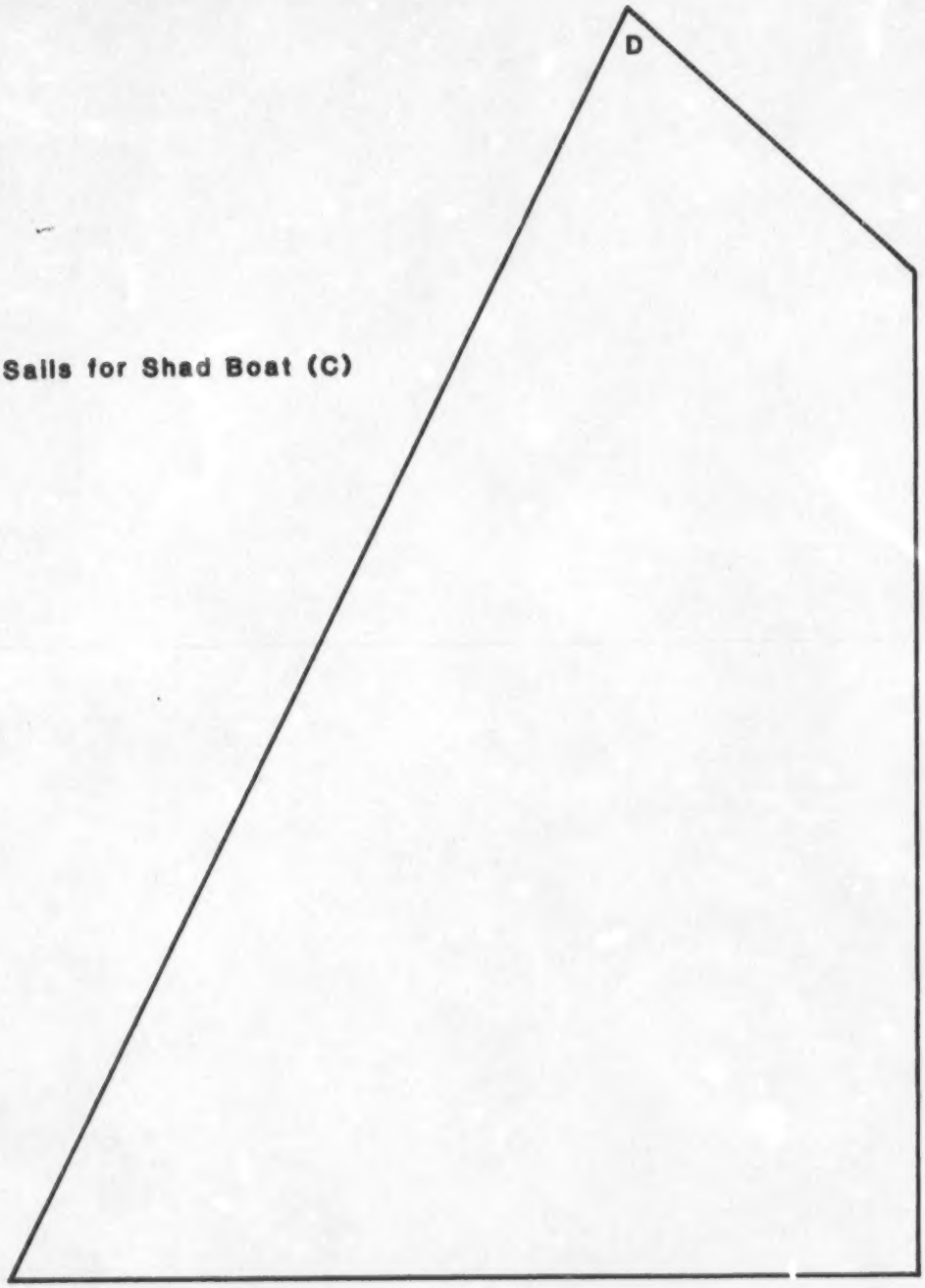


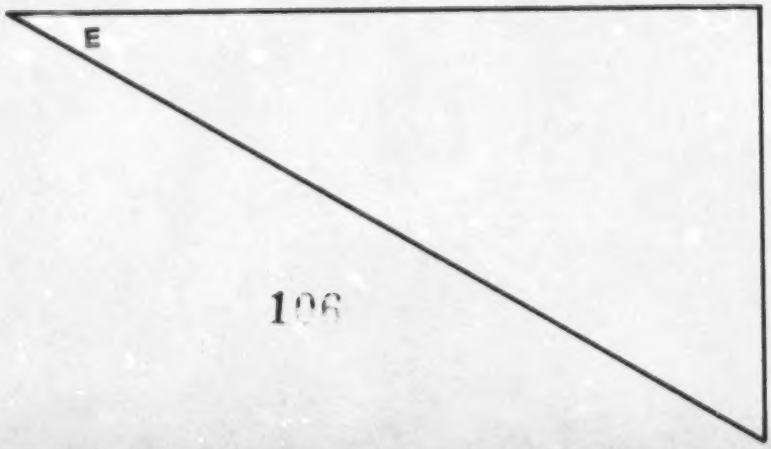
Stern (rear) of Shad Boat (C)

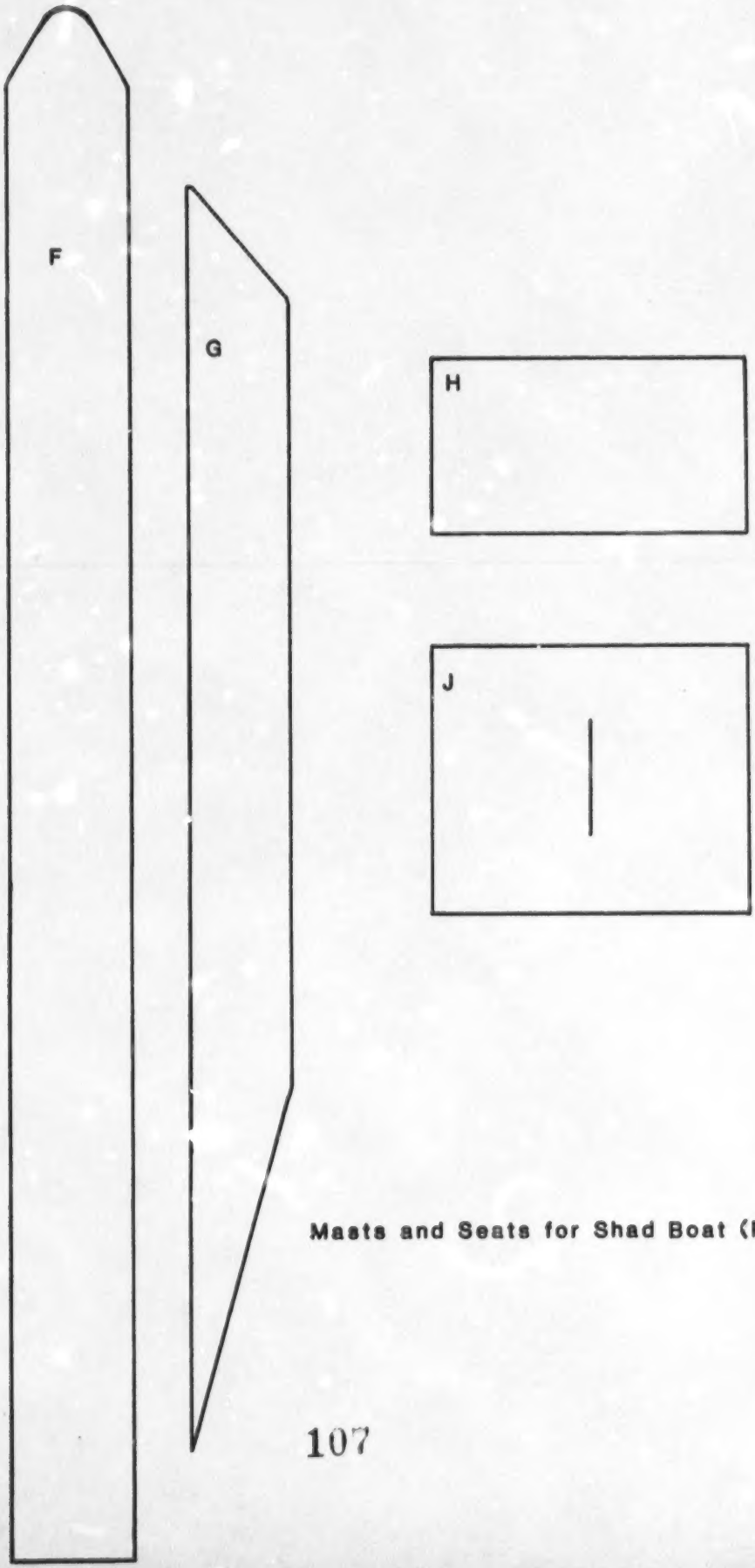


Rudder of Shad Boat (C)

Sails for Shad Boat (C)







Masts and Seats for Shad Boat (P)

COASTAL CRAFTS AND LIVELIHOODS

PRE - POST TEST

1. Nursery areas for commercial salt water fisheries are located in

   a. the open ocean.
   b. the salt marshes and coastal sounds.
   c. the Lakes.
   d. the Gulf Stream.

2. A place where boats dock and fish is packed for shipping is called a/an

   a. inlet.
   b. sound.
   c. port.
   d. bar.

3. Oysters belong to a group of animals called

   a. mollusks.
   b. finfish.
   c. crustaceans.
   d. origami.

4. Flounder is a/an

   a. mollusk.
   b. finfish.
   c. crustacean.
   d. origami.

5. If the dockside price of scallops is $3.00 per pound, what is the value of a haul of scallops that weighs 1,051 pounds.

   a. $31,530.00
   b. $3,153.00
   c. $315.30
   d. $31.53

6. Seafood is a good source of

   a. protein.
   b. iodine.
   c. Vitamins A and D.
   d. all of the above.

7. A food that is essential for the growth and repair of animal tissues

   a. carbohydrates.
   b. proteins.
   c. fats.
   d. iodine.

8. One percent of $750.00 is

   a.. $7,500.00
   b. $750.00
   c. $75.00
   d. $7.50

9. Residential property is reserved for

   a. homes.
   b. motels.
   c. marinas.
   d. amusement parks.

10. A temporary knot for making a rope fast to a piling is called a

   a. square knot.
   b. bowline.
   c. clove hitch.
   d. fisherman's bend.

11. A sailor's design on the plain surface of a whale's tooth is called a/an

   a. graphic.
   b. design.
   c. incision.
   d. picture.

12. The main body of a boat is called the

   a. bow.
   b. stern.
   c. hull.
   d. mast.